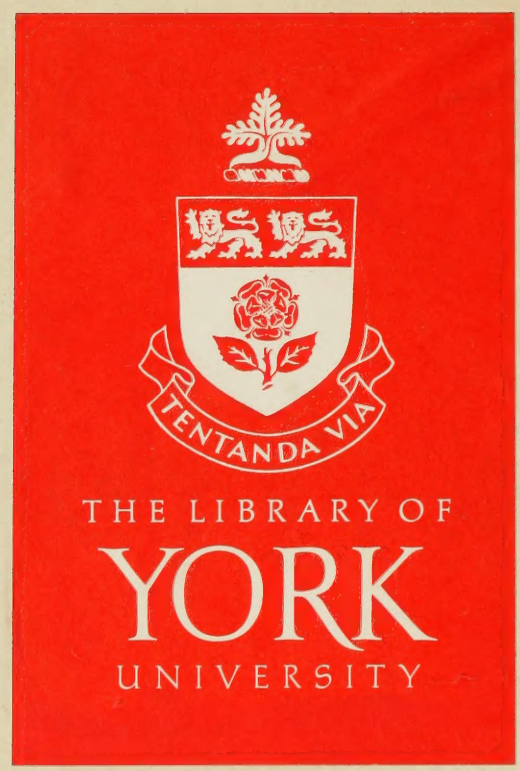
FINAL REPORT

OF THE

Ontario Game and Fisheries Commission

1909-1911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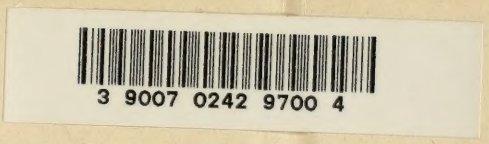
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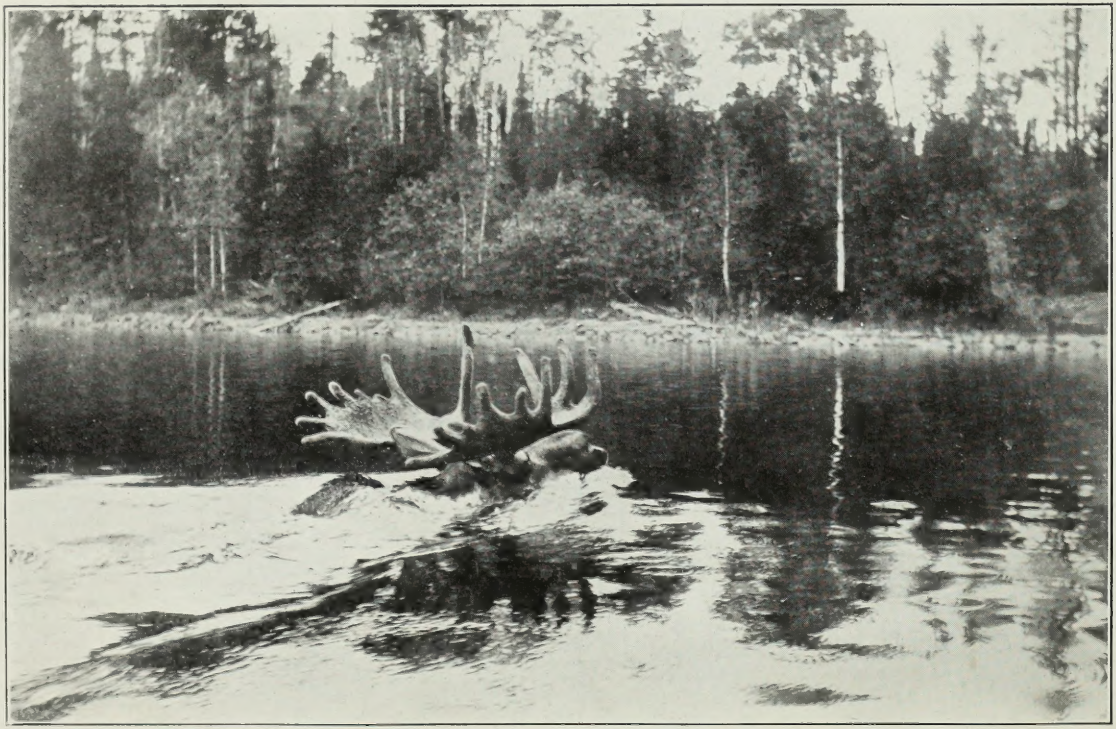

Moose in the Quetico Forest Reserve.

This unusually interesting photograph was taken by Mr. H. J. Bury, chief guide for the Commission, during its trip through the Quetico Forest Reserve. The animal came into the water less than 200 feet from where the party had halted for the midday meal, and commenced feeding on lily-pad roots. He did not turn to leave the spot till almost touched with the paddle and two canoes followed him for some little distance, Mr. Bury obtaining several snap shots.

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FINAL REPORT

OF THE

Ontario Game and Fisheries Commission

1909-1911

Appointed to enquire into and report on all matters appertaining to

The Game Fish, The Fisheries, and the Game of the Province of Ontario

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

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INTERIM REPORT.

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The illustrations in this report are principally from photographs taken by Captain R. M. Sims, D.S.O., the Secretary of the Commission, and Mr. H. J. Bury, head guide to the Commission on its trip through the Quetico Forest Reserve.

FINAL REPORT OF THE ONTARIO GAME AND FISHERIES COMMISSION

1909-1911

To the Honourable John Morison Gibson,

Lieutenant-Governor of the Province of Ontario.

May it Please Your Honour,—The undersigned, appointed by commission under the Great Seal of the Province, bearing date the seventeenth day of July, A.D. 1909, to make enquiries, take evidence, and report generally upon all matters appertaining to the game fish, the fisheries and the game of the Province of Ontario, which may injuriously affect the same, and any methods possible to increase their economic and other value to the masses of the people, begs leave herewith to submit his final report.

The instructions accompanying the Commission direct that the investigation shall include the following particulars:

(1) The condition of the fisheries and game within the Province of Ontario and the adjacent waters, including:

(2) The advisability of establishing provincial fish hatcheries, including the estimated cost of maintenance and construction, the best methods of operation, and other matters relating thereto;

(3) The alleged existence of contracts between fishermen within the Province of Ontario and foreign fish companies and individuals, together with the effect of such contracts (if any) upon the fisheries of Ontario;

(4) The matter of foreign fish companies and individuals encouraging breaches of the law on the part of fishermen, and others resident in Ontario;

(5) The qualifications, conditions of service, skill, efficiency (physical and otherwise), desirable for fisheries and game officials;

(6) The condition of the present equipment of the Department, together with the additional requirements (if any) in this regard in the matter of launches, boats, etc.;

(7) The advisability of the co-operation by the officers of other departments of the Government, and of other corporations, with the officers of the Department of Game and Fisheries, in assisting in the practical enforcement of the game laws and fishery regulations;

(8) Questions relating to the management of the public parks and forest reserves, especially in so far as the tourist sportsman traffic is concerned;

(9) All matters and things relating to fish and game which may assist in the efficient management of the Game and Fisheries Branch of the public service in Ontario, or be of economic advantage to the Province.

The Commercial Fisheries.

Depletion of the Fisheries.

It is hardly necessary for your Commissioner to call to your attention the fact that the commercial fisheries of the Great Lakes are rapidly dwindling, for scarcely a week elapses but that the lamentable diminution in one or other of the once flourishing fishing areas is strikingly recorded in the daily press. The grave significance of this state of affairs is not yet fully appreciated by the general public, mainly for the reason that, owing to conditions which will be hereinafter more fully discussed, the citizens of Ontario have not been educated to the economic value to themselves of the great fisheries lying at their very doors, or to the value of fish food as a factor in the daily dietary. The population of the Province, however, is rapidly increasing; the price of food rising higher and higher; and it is impossible to conceive that the day can be very far distant when the citizens of Ontario will awaken from their present lethargy, require from those in authority an accounting for the dissipation of their once splendid fisheries, and with no uncertain voice demand that the most drastic measures be forthwith adopted to save for themselves and for their children what is left of their fisheries, and, if possible, to restore them to something of their former prolificness.

There are still living in the Province men who can well recall the days when the waters of even Lake Ontario were literally teeming with whitefish, and to anyone hearing or reading their accounts it must readily occur that this magnificent fish, had it only been properly conserved, should have assumed in a populous Ontario the economic role of the deep-sea herring in the English markets. What a high-class, wholesome and, at the same time, cheap fish can mean to the welfare of the poorer classes of a populous community can hardly be over-estimated, a fact which can be attested to by anyone who has had experience of or even visited the more crowded areas of any of the greater English cities.

As a food the whitefish is, in all probability, the superior of the herring; the areas which it has inhabited are vast, and there can be little doubt but that under wise regulation, even without artificial assistance, the annual crop of this most excellent fish should have been sufficient to supply all the wants of the citizens of Ontario for a considerable time to come, while at the same time yielding a fair margin for export trade. That a neighboring nation should be consuming the great bulk of

Ontario's whitefish, leaving but a small margin at a high figure for her own citizens, will be discussed in a subsequent section; but the fact remains, however, that the diminution in the annual catch of whitefish has been so marked and persistent, in spite of increased and better appliances, that it must be open to the gravest doubt whether, under the present system of administration and regulation, the fisheries are not being actually destroyed, instead of merely depleted, for it must be remembered that to rehabilitate exhausted fisheries entails artificial production on a large scale; that artificial production on a large scale is only possible when there is an abundant supply of parent fish, and that the prolonged absence of schools of whitefish from certain of their former habitats may result, under the adaptable laws of nature, in a transformation of conditions such as to render those waters no longer as suitable for sustaining whitefish life.

In the Interim Report of this Commission reference was made to the sworn testimony, given to former Commissions, in regard to the immense quantities of whitefish that existed in the Great Lakes even forty and fifty years ago, and amongst other instances was cited that of 90,000 whitefish having been landed on Wellington Beach in one single haul of a net. What the average size of these fish may have been it is impossible to tell, but it seems safe to assume that it cannot have been less than approximately 2 lbs., thus making 180,000 lbs. of fish caught in a few hours, with a comparatively small amount of net, and with comparatively little effort or expense, in one tiny fraction of the whitefish area of Lake Ontario. When it is realized that the whitefish area of the Canadian portion of Lake Ontario is roughly one thousand four hundred square miles, some idea of the vast quantities of fish that must have existed in these waters can be gained, and the deplorable diminution that has occurred is very vividly brought home by a comprehension of the fact that, in spite of a steady increase in the quantity of nets used, for the fifteen years, 1892-1906, the average yearly catch for the whole 1,400 square miles of Lake Ontario's Provincial whitefish fisheries only just exceeded 250,000 lbs. Statistics are not available to show clearly the exact percentage of decrease since the days when the whitefish were so abundant, but, even if they were, it is doubtful whether they could more clearly emphasize the fact that it has been colossal than the brief comparison here made.

The decrease, however, far from having yet reached its limit, continues marked throughout almost all the whitefish areas of the Provincial waters, as the following short tables will show, and it is this alarming state of affairs which so strengthens the belief, as almost to make it a certainty, that unless stringent remedial measures are applied without delay, the fisheries will be, not merely depleted, but irredeemably destroyed.

CANADIAN WATERS OF LAKE SUPERIOR, 1892-1906.

Average yearly catch of whitefish:

1892–1896	1,123,000
1897–1901	591.000
1902–1906	462,000

CANADIAN WATERS OF NORTH CHANNEL AND LAKE HURON, EXCLUSIVE OF GEORGIAN BAY. 1892-1906.

Average yearly catch of whitefish:

1892–1896	1,657,000
1896–1901	940,000
1902–1906	1,051,000

GEORGIAN BAY, 1892-1906.

Average yearly catch of whitefish:

1892–1896	1,535,000
1897–1901	450,000
1902–1906	423,000

CANADIAN WATERS OF LAKE ONTARIO, 1892-1906.

Average yearly catch of whitefish:

1892–1896	291,000
1897–1901	245,000
1902–1906	238,000

In dealing with fishing statistics it is always possible to gainsay the conclusions arrived at from the comparison of any two particular years, and in fact such comparison affords but a slender foundation on which to base a sound argument owing to the fact that weather conditions and other possible contingencies may greatly affect the success of the fishermen in individual years. Indeed, on more than one occasion interested parties have availed themselves of the opportunities afforded by such comparison, when localized and restricted to two years, to proclaim through the public press that the commercial fisheries of the Province were still in a flourishing condition. A period of fifteen years, however, eliminates to a great extent this element of chance, and the averaging of the catches in periods of five years enables a clear idea to be formed of the extent of the loss or gain. It may, in fact, safely be said that outside of a few interested individuals whose desire for quick profit outweighs their appreciation of truthfulness, no one with any knowledge of the condition of the Canadian Great Lake fisheries to-day will deny that a steady decrease is occurring which must, unless something is soon done to prevent it, result in the complete exhaustion of the fisheries. The following short paragraph from a Sault Ste. Marie journal of November 25th, 1910, well illustrates this fact:

"LAKE SUPERIOR A FISHLESS SEA."

A despatch from Fort William says: "The catch of trout and whitefish in Lake Superior has never been so light as in the season now clos-

ing. The result of an all days's trip with one of the fish tugs is often not more than 300 pounds of fish, which is not enough to pay operating expenses. A half ton is considered an average catch on a single trip. That Lake Superior, known as the abode of the finest whitefish in the world, is fast becoming a fishless sea is a startling statement, but that is what the fishermen assert. Fishermen have been doing less business each year for some time. Tugs have been going farther and farther out each succeeding season, and now nets are set as much as five hours run from shore, but even in these unfrequented waters there are few fish."

Various reasons have been advanced from time to time to account for this decrease, some maintaining that the increased shipping on the waters was largely responsible; and others that it was due mainly to the pollution of spawning beds and feeding grounds owing to the sewage poured into the lakes at various points and other deleterious matter carried into them by streams and rivers boasting mills and manufactories on their banks. Doubtless each of these causes has played its part, but all the experts seem now to be agreed that without question the main and outstanding reason has been and is over-fishing. With this view your Commissioner is in entire accord.

In other departments of supply, such as domestic animals or plants, measures can be taken to increase the production of any particular species. Fresh land can be devoted to the purpose, new blood be introduced, or quicker breeding varieties imported or grafted. But, in dealing with fisheries, these channels of grappling adequately with the problem are closed for the reason that scientific knowledge of the life and domain of the fishes is exceedingly limited, chiefly owing to the obvious but greater difficulties that have been experienced in closely studying submarine conditions, so that for practical purposes only those areas already inhabited by any particular commercial fish are available for its exploitation, and the effects of the importation of new blood or new varieties are as yet so little understood as to be fraught with too much danger to make it advisable to undertake the experiment. Consequently to rehabilitate inland commercial fisheries exhausted through over-fishing there would appear to remain but two possible methods, namely, (*a*) by restrictive legislation, embracing alike the areas to be fished, the seasons of fishing, size limits, methods of capture, and, finally, the disposal of the fish when caught; (*b*) by artificial production, which in the sense here used implies the collection of spawn in vast quantities from parent fish on their natural spawning beds, its admixture, artificial incubation and hatching of the spawn, and, finally, the placing of the enormous quantities of fry or fingerlings thus obtained in the waters to be restocked.

The depletion of the fisheries of the Great Lakes has not been so sudden an occurrence as to have escaped the notice of experts and others interested in them on both sides of the boundary. Indeed the reverse has been the case, and as a result of the control of these fisheries being

vested in numerous and more or less independent authorities, namely, the Federal Government of the United States, the Governments of Indiana, Illinois, Michigan, Minnesota, New York, Ohio, Pennsylvania and Wisconsin, the Dominion Government of Canada and the Government of the Province of Ontario, many and various expedients have been resorted to, scientific investigations made, laws, regulations and restrictions introduced, and experiments in fish hatchery operations on a large scale instituted and tried out, so that before entering upon a discussion as to the best means of rehabilitating the commercial fisheries of Ontario it becomes necessary to review briefly the results that have been obtained under various conditions prevailing in different localities throughout the Great Lakes, and it is plain, also, that what scientific knowledge there is of the lives, habits and distribution of the various fishes under consideration should be clearly borne in mind, for more than once in the history of the Great Lakes legislation has been introduced and enacted to meet supposed conditions, quite at variance with the laws of nature, owing entirely to the machinations of those whose misrepresentations were the outcome of purely selfish interests. It would seem, however, hardly to fall within the scope of a report of this nature to delve deeply into the mysteries of scientific research in regard to each individual class of fish, even were your Commissioner a scientific ichthyologist, to which distinction he lays no claim, and it is deemed, therefore, sufficient for the purposes of this report to set out the salient features within the knowledge of present day science in regard to one most prominent variety, the whitefish, while calling attention to the fact that, although all that is said may not apply equally to every other variety of commercial fish, much of it is directly pertinent and applicable in a slightly modified form.

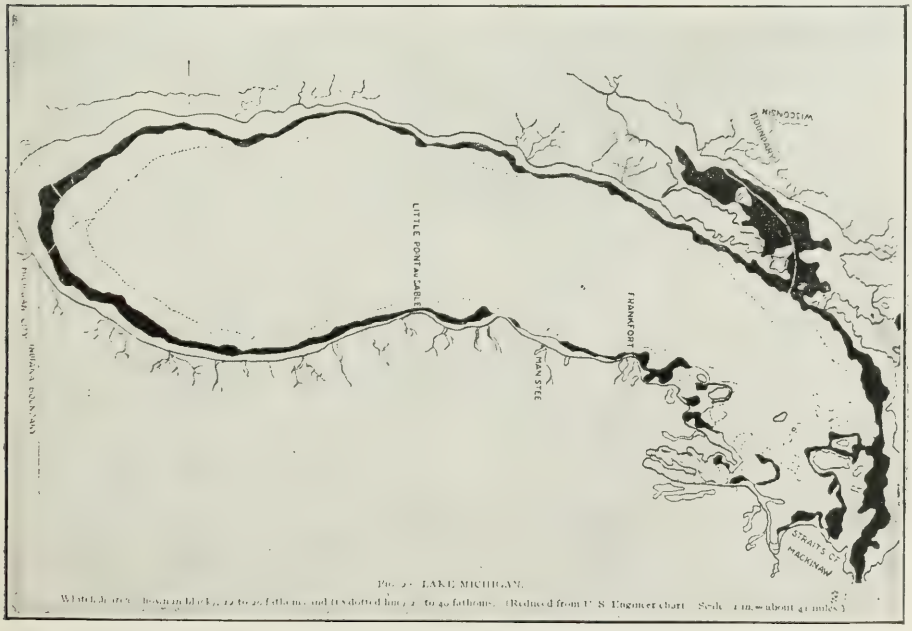
The Whitefish.

There are three species of fishes commonly referred to as whitefish, namely, the true whitefish (Coregonus Clupeiformis Mitchill), the Frost Fish (Coregonus quadrilateralis), and the Sault Whitefish (Coregonus labradoricus). Investigation has disclosed that the true whitefish is a bottom feeder, as also that the depth at which it occurs most abundantly is 10-35 fathoms.

This range is that occupied by the fish during eight or nine months of the year, and is, therefore, undoubtedly its main feeding grounds. It is likewise the area over which commercial fishing operations have been carried on profitably at other times than during the migrations of the fish. In discussing, then, the common or true whitefish it becomes at once apparent that the area available to this fish is comparatively limited. It is probably true that young whitefish of less than 1¼ lbs. are to be caught in depths of water ranging from 20 feet up, but as these are immature fish and consequently unsuited for commercial purposes, this fact does not materially affect the question of available whitefish area.

LAKE SUPERIOR.

By kind permission of Mr. Paul Reighard, University of Michigan.



LAKE MICHIGAN.

By kind permission of Mr. Paul Reighard, University of Michigan.

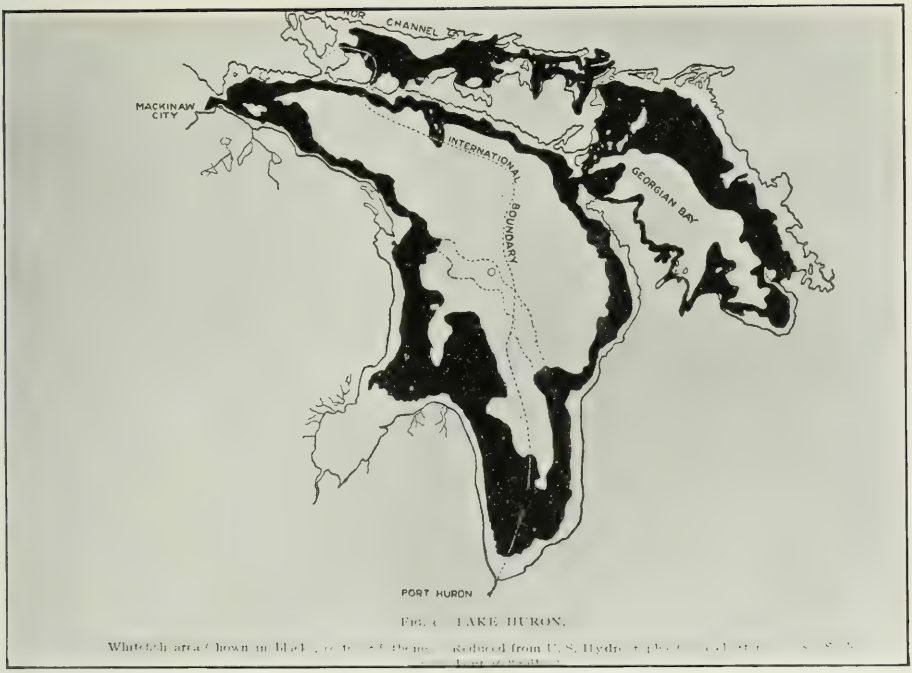


FIG. 3. LAKE HURON.

Whitefish area (shown in black, 12 to 30 fathoms). Reduced from U. S. Hydrographic Office chart no. [illegible] (about one inch = [illegible] miles).

By kind permission of Mr. Paul Reighard, University of Michigan.

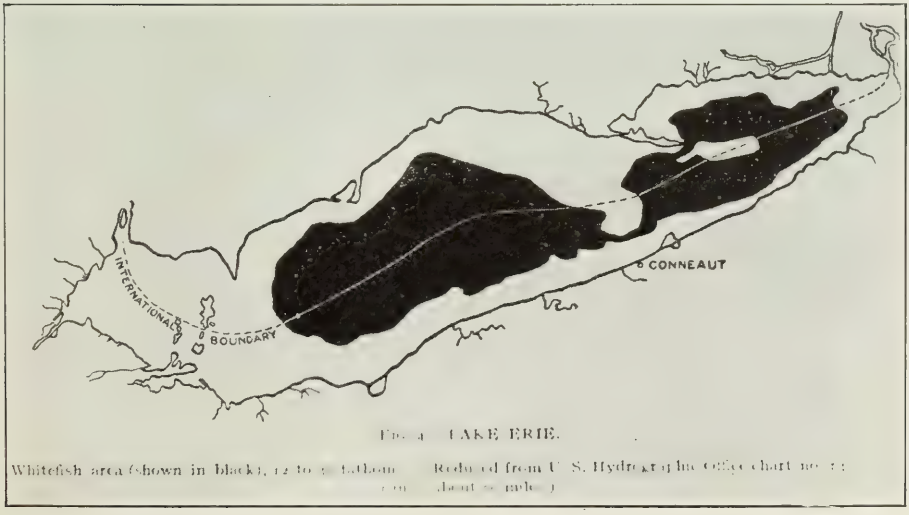


FIG. 4. LAKE ERIE.

Whitefish area (shown in black, 12 to 30 fathoms). Reduced from U. S. Hydrographic Office chart no. [illegible] (about one inch = [illegible] miles).

By kind permission of Mr. Paul Reighard, University of Michigan.

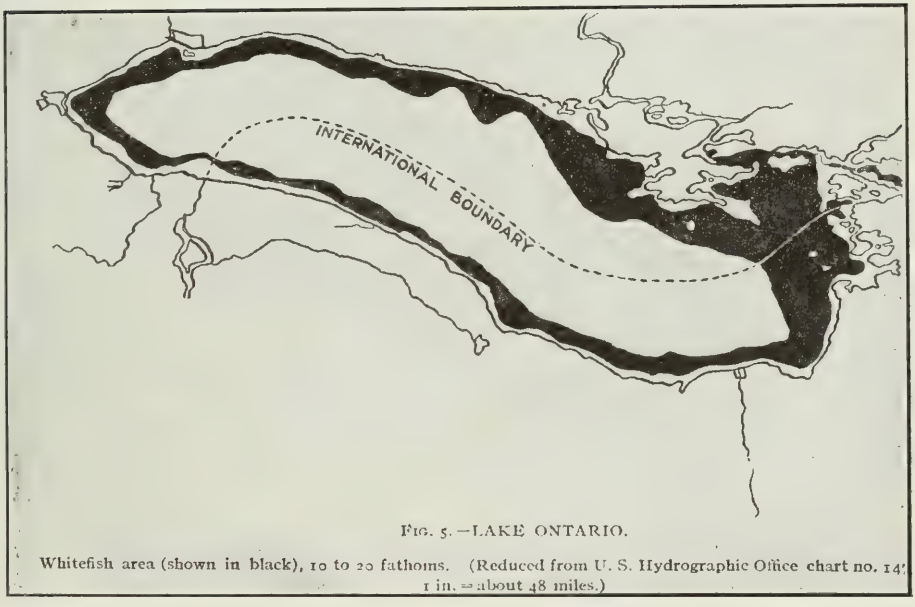


FIG. 5.—LAKE ONTARIO.

Whitefish area (shown in black), 10 to 20 fathoms. (Reduced from U. S. Hydrographic Office chart no. 14; 1 in. = about 48 miles.)

By kind permission of Mr. Paul Reighard, University of Michigan.

Turning to the charts of the various lakes, it is evidently possible to mark clearly thereon the area afforded by each which is available for the sustenance of whitefish life. The result, including both Canadian and United States' waters, is found to be approximately as follows:

AREA, WHITEFISH AREA AND PERCENTAGE OF WHITEFISH AREA OF EACH OF THE GREAT LAKES.

	Total area.	Whitefish area.	Percentage.
Lake Superior	32,000	7,400	23
Lake Michigan	22,000	2,600	12
Lake Huron	21,000	9,400	45
Lake Erie	9,500	4,100	43
Lake Ontario	6,500	2,200	34

Having plotted out these whitefish areas it will be noted that, with the exception of Lake Erie, the whitefish areas of the individual lakes, while varying considerably in breadth, more or less closely follow the sinuosities of the coast line, so that between the North and South or East and West boundaries, as the case may be, there intervenes a body of deep water unsuited to the true whitefish.

The evidence obtainable would appear to indicate that the whitefish does not wander at random throughout the areas available to it, but rather that it is local in its habits. In fact, those who frequently handle the fish can, as a general rule, easily distinguish between the fish of the various lakes. Twice a year, however, the whitefish leaves its habitual feeding grounds for shallower waters. In the southern lakes the first migration occurs about June or July (varying somewhat according to the latitude in the northern lakes), and the fish returns to the deeper water, as a rule, early in August. The cause of this migration has been much discussed, but perhaps the most plausible theory so far advanced is that this is the season of the year when the insect larvæ, on which the fish delight to feed, are most abundant in the shallower waters. The second migration occurs in October and November, according to latitude, and is for the purpose of spawning, continuing roughly for one month, during which period it is generally admitted that the fish do not eat. Both migrations would appear, from investigations that have been made, not to be a procession along the indentations of the shore, but rather a regular forward movement from the deeper waters of the normal feeding grounds into the shallower waters most convenient of access.

The natural spawning beds of the whitefish, so far as ascertained, consist of ledges of honeycombed and other similar rock, found in the shoaler portions of the lakes. The honeycombed rock, as the name implies, is dotted with innumerable small holes and cavities into which the eggs, as they are voided by the fish, may fall and remain comparatively secure from the depredations of spawn-eating fish, and also more or less free of the danger of being smothered by mud or other noxious deposits.

The whitefish is not a nest-building fish, but is what is known as a

"School Spawner," approaching the spawning beds either singly or in schools, the female voiding her eggs irrespective of the proximity or otherwise of a male fish. The life of an unfertilized egg in the water is held to be exceedingly short, and it would appear to be a fair presumption that the same would equally apply to the germ contained in the milt of the male fish. The average number of eggs produced by the female whitefish is computed at approximately 35,000, assuming that the normal weight of the average commercial female whitefish is 2½ to 3 lbs., but the larger the fish grows, the more eggs she will usually produce, as many as 150,000 having been taken from a fish weighing eleven pounds. From the fact of the great quantities of eggs that must annually have been deposited, it has been deduced that under natural conditions the percentage of eggs hatched cannot have been very high, even in the days before commercial fishing on a large scale had been instituted, and before the spawning beds had possibly been polluted, for the normal yearly loss to swimming fish can hardly have attained such colossal proportions, and, as already indicated, the depositing of the eggs in the honeycombed rock affords considerable security against the ravages of enemies of the eggs. Consequently, it would appear that there are considerable grounds for the contention of many experts that only a very small proportion of the eggs, deposited under natural conditions, become fertilized. By some authorities this percentage is placed as low as one. On the other hand there has never been any question as to the vast quantities of whitefish that existed throughout the allotted areas in each of the Great Lakes prior to the advent of commercial fishing on a large scale, and from this fact alone it would not appear unreasonable to draw the conclusion that nature had perfected the spawning arrangements of the whitefish sufficiently to maintain an optimum population of them under normal conditions, in spite of the depredations of their enemies at the various stages of their lives, and in spite of the loss from other natural causes, even though such provision might obviously not be sufficient to meet the tremendous drain caused by excessive commercial fishing. The belief in the efficacy of nature's arrangements is strengthened, moreover, by sundry investigations which have been made as to the fertilization of the eggs of other school-spawning fish, in which it has proved exceedingly difficult to find any unfertilized eggs amongst many thousands examined on the spawning beds themselves, while the process of spawning was in progress.

What the actual percentage of eggs which are deposited and hatched under normal conditions may be, it would seem impossible at present to determine, but the percentage of eggs, collected from fish ripe for spawning, that can be hatched under artificial conditions, has been definitely ascertained; 75 per cent. is placing it at a very conservative estimate, and it must further be remembered that the eggs which are taken to the hatcheries are relieved of all danger from natural enemies, and the devastations of silt and other filth during the process of incubation, so

that a considerable saving in fertilized eggs is thereby most certainly affected. Moreover, the fry obtained under artificial conditions appear just as hardy as those hatched in their natural state, although it would be impossible to compare the capabilities of such fry in looking after themselves when placed in the open waters with that of the percentage of fry naturally hatched and which have survived up to equal stages.

Consequently, viewing the comparative merits of natural and artificial hatching of whitefish spawn from an unbiassed standpoint, there would appear to be little doubt that the hatcheries can produce a very much greater percentage of fry from the eggs deposited than can nature unassisted, but that nature, which alone produced the millions of whitefish which crowded the waters before the advent of the modern commercial fisherman, is far too valuable an ally to be dispensed with altogether.

The whitefish, unlike many other varieties of fish, is in fair condition for eating at the time of spawning, for the reason that, owing to the low temperature of the water in October and November, the flesh is firm and flaky, and coming presumably fresh from bounteous summer feeding grounds, the fish itself is exceedingly fat.

From the above brief outline of the habits, life and domain of the whitefish, it would seem, then, that the following conclusions may be justly drawn:

(1) Under natural conditions only a comparatively small number of the eggs deposited are hatched.

(2) A greater number of eggs can be hatched by artificial means.

(3) In view of the fact that the average female whitefish produces 35,000 eggs, and that a percentage of these will be hatched by natural means, and a very high percentage can be hatched by artificial means, the destruction of immature fish—that is, fish which have not spawned at least once—is a great economic loss and detrimental to the welfare of the fisheries.

(4) The spawning seasons, spawning beds, and areas occupied mainly by immature fish can be accurately ascertained in each lake.

(5) The feeding grounds of the mature fish are known.

(6) The fish is largely local in its habits.

THE EFFECTS OF LEGISLATION ON THE WHITEFISH FISHERIES.

When first the diminution in the catch became apparent, the most obvious remedies were resorted to in the hopes of checking it, including the regulation of appliances, methods of capture and size of the mesh, the limitation of the numbers of nets in a given locality, the closing of certain areas and seasons, and, lastly, experiments in artificial propagation.

It was not to be expected that conditions should be precisely similar throughout the vast extent of the Great Lake fisheries, nor that all the authorities concerned in their control should see eye to eye in the matter of adopting the best possible means to suit their individual necessities, for it must be remembered that from the beginning political considerations have played no insignificant role in determining these matters on both sides of the boundary. Consequently, each authority having selected the remedies that seemed best in its judgment, there arose a situation of much complexity, in which the various regulations prevailing in adjacent waters not only served to increase the difficulties of efficient administration and enforcement of these various laws, but also rendered it almost impossible to test accurately the efficacy of this or that measure, for while regulations can obviously be localized to imaginary boundary lines, it is but rarely that in practice the fishery areas will be found to conform to the same, and to discover the real merits of a fishery enactment it is plainly necessary to have it in force throughout the whole of the particular fishing area affected. Moreover, each authority could, under this variegated system, attribute the continued decrease in its fisheries to the foolishness of its neighbors' regulations, a situation which, while it may be of temporary political convenience, plainly harbors a terrible economic folly from the viewpoint of a perpetuation of the fisheries and the welfare of the people concerned. For many years this fact has been recognized by experts on both sides of the boundary, with the result that a Joint Commission was appointed by the two Federal Governments concerned, and there has at length been drawn up a code of regulations which are to apply equally to all international waters of the Great Lake system. The date for the promulgation of this international code of regulations has not yet been fixed, but it would appear that it cannot now be much longer delayed, and in view of the fact that, once promulgated, it will remain in force for at least a term of five years, and that it deals decisively with the methods of capture and meshes of nets, it obviously becomes unnecessary for your Commissioner to discuss either of these questions. The code, however, deals with the limitation of nets only to the extent of defining the proximity of pound nets to each other, of series of pound nets to each other, and numbers in a series, and does not deal at all with the question of close seasons, and only generally with that of artificial propagation, and, since it is clearly stated in the opening paragraph of the code that domestic legislation is not affected otherwise than to the extent of the provisions of the code, it would seem reasonable to suppose that all these matters are left to the judgment of the authorities concerned. Consequently it would appear necessary to touch on each of these matters separately.

The Limitation of Nets.

That in virgin waters teeming with fish there exists an indissoluble relation between the amount of net used and the amount of fish caught

is a fact too obvious to need explaining, and it is equally clear that in proportion as quantities of fish are removed from such waters, so will the rate of catch to each unit of net diminish. Consequently, when inland commercial fisheries have been exploited for some little while, even over vast but, nevertheless, strictly limited areas, such as that of the Great Lakes, there must come a time when the multiplication of nets ceases to be commercially profitable. It has, in fact, been held by many authorities that, since each area will only produce a certain amount of fish, dependent more or less on the natural and artificially assisted increase of previous years, it is extremely doubtful whether more fish are actually captured where the proportion of nets to the area is excessive than if the amount of nets was considerably reduced, and in any case that the situation is bound to adjust itself through economic causes, those weaker financially amongst the fishermen going to the wall in due course. In consequence, throughout a considerable portion of the Great Lake waters no effort at all has been made to restrict the numbers or lengths of nets in use.

In theory this argument is, in all probability, perfectly sound, but in practice, under the conditions which exist, its logic is questionable. In the first place it would seem to presuppose the prevalence of genuine rivalry among fishermen, each working for his own interests, and takes no stock of a condition where the vast majority of the fishermen are but the creatures of a great and powerful corporation. Secondly, it deduces that complete exhaustion will never actually occur, because such exhaustion would be commercially unprofitable. Here, again, is an assumption open to the gravest suspicion, for it takes no count of the operations of a great corporation which, in its avaricious cupidity for fat and immediate dividends, is but all too willing to extract the last ounce of fish food from any waters on which it can lay its grasp to-day, leaving to-morrow and the dim future to take care of itself. Thirdly, no account is taken of location by the champions of this argument, although it must be plain that where nets are thickly set in channels, or across narrows, along which the fish are wont to move as they wander over the area of their particular feeding grounds, the numbers of fish in that locality will of necessity very rapidly diminish. Undoubtedly, however, there is much strength in the premises of the argument itself, namely, that each area will only produce a certain amount of fish, and, even though extraneous conditions may be such as to prevent the automatic adjustment of the proper relation between nets and area, nevertheless the argument is useful as demonstrating the fact that a limitation of nets to the minimum quantity that will catch that amount must be an economic advantage, for the less the expense at which the fish is caught, the less ought to be the price to the consumer.

The price of fish has been rising steadily and there has been a corresponding tendency of recent years towards an increase in the quantities of nets, as the following table discloses:

Average Fathoms of Pound and Gill Nets in Use in Canadian Waters 1892-1906.

	1892–1896	1897–1901	1901–1906
Lake Superior	151,500	243,800	206,000
Lake Huron	589,100	457,100	742,500
Georgian Bay	617,300	508,600	515,300
Lake Erie	65,500	124,800	207,200
Lake Ontario	171,800	212,700	214,000

On the American side, also, the general tendency towards an increase has been quite as pronounced, and several areas on the American side of the boundary are swept by a very much higher percentage of nets than is the case in any Canadian waters. On the whole it would appear, however, that the percentage of fish taken to the fathom of net is distinctly in favour of the Canadian fishermen in those areas where the Americans have a great preponderance of nets over the Canadians and a fair comparison can be made, although more fish are taken on the American side. Taking the whitefish again as an example:—

State of Michigan, Waters of Lake Superior, Whitefish Area, 2,400 Square Miles.

Years.	Average nets in fathoms.	Total pounds caught.	Percentage.
1892–1896	703,300	2,117,000	3.22
1897–1901	750,300	1,169,000	1.53
1902–1906	1,231,300	1,193,000	.91

Canadian Waters of Lake Superior, Whitefish Area, 3,600 Square Miles.

Years.	Average nets in fathoms.	Total pounds caught.	Percentage.
1892–1896	151,500	1,123,000	9.27
1897–1901	243,800	591,000	2.48
1902–1906	206,000	462,000	2.32

State of Michigan Waters of Lake Huron, Whitefish Area, 3,200 Square Miles.

Years.	Average nets in fathoms.	Total pounds caught.	Percentage.
1892–1896	525,400	501,000	.99
1897–1901	847,100	480,000	.79
1902–1906	991,700	515,000	.58

Canadian Waters of Lake Huron and North Channel, Whitefish Area, 3,000 Square Miles.

Years.	Average nets in fathoms.	Total pounds caught.	Percentages.
1892–1906	589,100	1,657,000	3.07
1897–1901	457,100	940,000	2.24
1902–1906	742,500	1,051,000	1.45

It must, of course, be noted that very extensive fish hatchery operations have been in force in the American waters above mentioned, while on the Canadian side only comparatively trifling efforts have been made in this direction in the case of the North Channel, and none in the case of Lake Superior, but, having regard simply to the question of the limitation of nets, the tables above given are interesting as showing, firstly, that the price of whitefish in Canada should have been considerably less to the consumer than in the States in view of the less cost of production as proved by the higher percentage of catch of the Canadian nets, although, unfortunately, this has not been the case, and secondly, that in the case of Lake Superior two apparently similar areas, in one of which a considerably higher percentage of nets has been in use than in the other, that is, an area with a limited as against an area with an almost unlimited number of nets, both show a steady decrease, proving apparently thereby that both were removing more fish than the available increase could withstand, which, again, should serve to emphasize the very obvious fact that where the limitation of nets is carried to such a point that the catch of the nets is less than the normal increase, the result must be an augmentation of the numbers of fish in the waters.

It would seem then that in the limitation of nets there exists a practical means of maintaining the balance between the yearly fish crop and the annual increase to be anticipated in particular varieties of fish, of affording the fish reasonable security against annihilation in traversing narrows or channels, and, in a measure, of regulating the cost of capture and in consequence, the price to the consumer.

Close Seasons.

The main object of a close season for fish is to enable the fish to perform its breeding functions in security. It is the habit of practically all the more valuable commercial fresh-water fishes to journey to the shoal places of the lakes, or up into the creeks and rivers, to spawn, and consequently, during the period in which the fish is passing through narrows or channels on its way to and from the spawning beds, or is occupied on the beds in the business of reproduction, it is peculiarly vulnerable to the attacks of the commercial net fisherman. Consequently, unless some protection is afforded to the fish at these periods an enormous quantity of ripe spawn will remain undeposited, which fact in its turn will evidently have a sinister effect on the natural increase of a future year, that is, on the quantities of young fish available to take the place of those disappearing through natural processes or owing to the operations of the commercial net fishermen.

Reference has been made in a preceding section to the fact that, under the treatment of modern scientific hatchery equipment, a far greater percentage of eggs can be hatched out than would take place in the course of nature, but in the same section it was also attempted to prove that under no circumstance could it be the part of wisdom to seek

to dispense altogether with the natural processes of reproduction. The success which has attended fish hatchery operations on a large scale has not tended, however, towards making this latter theory acceptable to the majority of fish-culturists. It has on the the contrary, had the effect of creating a belief among them that the results obtained by natural production were so insignificant that the process could safely be neglected provided there existed sufficient hatchery equipment to deal with the number of eggs obtainable. As a natural outcome of this theory, not only has the close season for fish during the breeding season been abandoned over a considerable number of the fishing areas in which great quantities of artificially hatched fry can be planted, but there has developed, also, a school of ardent fish-culturists which claims that inasmuch as the hatchery plants must be supplied with eggs to enable them successfully to carry out their proper functions, the breeding season of the fish is obviously the period in which, at all costs, fishery operations should be most vigorously conducted, the commercial net fishermen being instructed in the art of taking and mixing spawn, licensed only on condition that they do so, and paid by the hatcheries a small fixed sum for a given quantity of eggs, the fate of the parent fish being deemed immaterial in the light of the immense increase which it will have contributed to assure. Further, in the opinion of this school, even supposing close seasons to be deemed absolutely necessary, the logical time for such would be during those periods when the fish can be most readily caught, but when they are not laden with ripe spawn, such as the spring migration of the whitefish, referred to in a previous section. Whatever may be the merits of this contention it is quite plain that it must depend for its execution on the existence of an ample hatchery plant.

It can be shown that in those Canadian waters where practically no planting of fry has been effected, such as the fisheries of Lake Superior, data of which have already been given, in spite of a close season being in force during the alleged breeding season of the whitefish, the catch has steadily diminished, and the same can be shown in regard to Canadian waters, such as Lake Ontario, in which planting of fry has occurred on a moderate scale. This, however, can hardly be deemed proof that the close season is inefficacious, for a similar state of affairs can be disclosed in certain of the American fishing areas, where no close season is in effect and artificial propagation is in full blast on a gigantic scale. It would seem, on the contrary, to suggest that, as evidently the annual catch is still in excess of the available increase, it cannot but be exceedingly unwise to neglect any possible means of assisting that increase, or, in other words, that the close season should be maintained until at least it has been demonstrated successfully over a period of years that it can safely be dispensed with. Most particularly so must this be the case with Ontario, who herself possesses no hatchery equipment at all, but is entirely dependent on the Dominion

Government for even the modest efforts that are being made in this direction.

In dealing with this question, moreover, it must be remembered that, although almost throughout the Canadian waters of the great lakes there has existed a legal close season, this close season has been, unfortunately, far from rigorously enforced, owing in certain localities to the deliberate laxity or inefficiency of the officials whose duty it was to do so, and in others, such as the north shore of Lake Superior, to the lamentable lack of even the most obviously indispensable equipment to enable the officials to carry out the duties they were appointed and paid to perform.

Also, it is well known to those versed in fishery lore that the dates of the close season, as at present existing, do not in most cases tally with the actual period of breeding operations, for, firstly, the dates are fixed for the fisheries as a whole, whereas the difference in latitude will account for a normal variation of at least three weeks, and secondly, climatic conditions will every year exercise a considerable influence in hastening or retarding the general movement of the fish to the spawning beds.

In support of at least the first of these contentions may be quoted the conclusions arrived at by the Georgian Bay Fisheries Commission, who reported that after an examination of practically all the fishermen in the district, and those interested in, or having knowledge of, the fisheries they were forced to the conclusion that the whitefish spawned on an average fifteen days earlier in the northern and western waters of that area, than they did in the more southern and easterly, and consequently recommended that the close season for whitefish in the Georgian Bay region, north and west sections, should be from October 1 to January 1 following, and for the southern and eastern sections from October 15 to January 1 following. When such divergence as this in the dates of spawning of one particular variety of fish exists in waters so comparatively adjacent, it is easy to realize how much more must it be the case when the latitude and normal temperature of the waters are widely different.

It has been held by some authorities (amongst others the Georgian Bay Fisheries Commission, which, of course, included so great an expert as Professor Prince, the Dominion Commissioner of Fisheries), that on account of its voracious qualities, and general hardihood, the great lake trout does not require so much protection as does the more defenceless whitefish, and consequently that, even if the trout do congregate on the spawning beds considerably earlier than provided for by the close season afforded them for protection during this period, no great harm will be done by netting them at such times. This, however, would seem hardly to be a logical deduction, for whatever may be the relative defensive powers of fish in regard to each other, all are equally defenceless against the operations of the commercial net fisherman when they

are congregated in throngs on the spawning beds, and the result of netting them at this period, must in each and every case be alike, namely depletion, unless, of course, some provision is made to care for the spawn.

It would appear then, that in so far as the fisheries of Ontario are concerned, the time has most certainly not yet arrived for the abandonment of the close season, but that on the contrary its continuance remains a most vital necessity; that in view of the steadily diminishing production of the Canadian great lake fisheries and of the absence of adequate fish hatchery plants it is imperative to obtain the utmost possible benefits from the close season; that these benefits can only be fully secured by the most rigid enforcement of the close season, which implies an adequate force of competent and honest officials supplied with an ample and efficient equipment; and, lastly, that some measures should be taken without delay to secure a revision of the dates of the various close seasons, so that they may tally with the actual dates of the spawning movements in the various areas of the Provincial fisheries.

Close Areas.

Nearly allied with the question of close seasons is that of close areas. It has been pointed out that for the greater portion of the year the mature fish inhabit certain areas which may be deemed their normal feeding grounds; that the immature fish will be frequently found at these periods in shallower water, and that the mature or commercial fish leave their regular feeding grounds at certain known periods of the year for the purpose of spawning, proceeding in general to certain well-known, or at least easily located, areas to perform their breeding functions.

The general principle of setting aside areas for the conservation of natural resources has been widely accepted, and is applied to-day in the matter of headwaters of river systems, forests, bird and animal life, perhaps nowhere more extensively so than in the Province of Ontario, but in the conservation of fish life in the great lakes it is conspicuous only by its almost total absence. Why this should be the case it is hard to explain, for plainly a principle, acknowledged to be so eminently beneficial to other great but exhaustible natural resources, could not well but prove itself equally advantageous in the conservation of fish life.

In the Report of the Dominion Fisheries Commission on the Fisheries of the Georgian Bay, a recommendation was made as to the setting aside of a considerable area, in which no commercial fishing whatever should be allowed, and rod and line angling only on the payment of a special fee. Although this most excellent recommendation was designed more particularly for the purpose of perpetuating in these waters the sporting fish, the black bass, the mascalonge, and the pick-

erel, doubtless, had it been acted upon, it would have had a beneficial effect, also, on the other classes of fish, for though the area selected did not apparently include any of the recognized feeding grounds of the commercial whitefish or great lake trout, on which these fish are to be caught in commercially profitable numbers, undoubtedly many of the immature fish of both varieties inhabit these waters, and would consequently have had complete protection. It would seem, indeed, that wherever considerable areas of water are known to sustain for the most part only the small or immature of the leading commercial fishes, whether or not sporting fish exist in them, such areas might all of them be set aside with advantage, for there is nothing more certain than that, if commercial fishing operations are conducted in such areas, the small or young fish, which predominate, will be destroyed in great numbers, for they will inevitably get into the nets, and this, even in the event of the enforcement of the size limit being sufficiently stringent as to prevent the fishermen getting them to the markets, must mean a most prodigious waste, whose effects cannot but be felt throughout the nearby fisheries in after years.

There are also certain other areas in which the fish are only to be caught at those periods of the year when they are spawning, or proceeding to the spawning beds. Unhappily, such areas, of which perhaps the Bay of Quinte is the most prominent example, sooner or later become the hunting grounds of a band of men who, appreciating the ease with which money is to be made by removing the fish as they crowd down the narrows, or arrive in schools on the spawning beds, undertake such operations regularly under the banner of legitimate commercial fishing, although for the most part they would be both incapable of and unwilling to pursue their normal calling on the open waters, and remaining satisfied with the profits they thus speedily make at the expense of the welfare of the whole fisheries are content to sit down for a large part of the year in totally unprofitable idleness. That if a close season is to be at all effective such areas should be definitely set aside from all commercial fishing, must be very plain to any unbiassed mind, for to allow fishing in them is at once to negative the results which are, avowedly, being sought.

It is, of course, absolutely certain that the so-called commercial fishermen in these areas would protest against the introduction of any such measures to the limits of their power, but it would seem that the interests of the public at large, which suffer so terribly through their operations, cannot but be held to outweigh the selfish interests of a comparatively small number of men, whose principal occupation is to profit by the slaughter of easily caught fish, to which every citizen of the Province has as much right as they, at the very season when those fish are about to be, or are actually engaged in, reproduction for the perpetuation of the fisheries. Moreover, the political significance of their outcry could not be but momentary, for even if the public did not at

first appreciate that the claims of these men were unjust, the same public would no doubt quickly realize that there is plenty of work throughout Ontario for those anxious to find it, and would further most willingly open its ears to the legitimate and seductive argument of cheap fish food for the citizens of the Province.

The conclusions to be drawn from the above section would appear to be, then, that so long as it is necessary to maintain a close season, so long will it be highly beneficial to the general fisheries to set aside from commercial fishing such areas as are only made use of by the fish for the purposes of spawning, or which for the most part are only inhabited by the small or immature of the commercial fish.

A Close Period.

As a final recourse for the rehabilitation of an exhausted but not completely annihilated supply of animal life, there is no more apparent expedient than that of declaring a close period. This method has been tried out in regard to game and game birds in several localities with considerable success, but no government has as yet made the experiment in regard to commercial fisheries, although there are certain well known instances where such a measure would long since have proved an inestimable benefit. In the case of Ontario's Great Lake fisheries, although the decrease continues to be alarmingly marked, it must be remembered that at the present time the great bulk of the fish caught in Canadian waters finds its way into the markets of the greater American cities. Consequently, it would appear that the introduction of such a measure, which could not but entail considerable hardship on the citizens of the Province, need never be resorted to, until at least the experiment has been made of retaining Canadian fish for Canadian consumption only, an enactment which obviously would at once very considerably diminish the demand for, and consequently the drain on, the fish, for it would take no doubt some considerable time to develop a really extensive fish market throughout the Province, and this would afford the fisheries at least a period in which to recover from their exhaustion.

THE EFFECT ON THE WHITEFISH FISHERIES OF EXTENSIVE HATCHERY OPERATIONS.

In several sections of this report reference has already been made to the fish hatchery operations which have been and are being conducted in connection with the great lakes fisheries. It has been pointed out that so far as Canadian waters are concerned the Dominion Government alone has engaged in this enterprise, and at that not very extensively throughout the major portion of the fishery areas. On the other side of the border, however, a very different situation exists, for

there the various States concerned in the control of the fisheries appear to vie with each other in the perfection and increase of their plants, despite the fact that the Federal Government is also largely interested in the same work.

Nothing that has been said in previous sections has been in the least intended to belittle the importance of these operations, for it is plain that if the fisheries are to continue to withstand the ever-increasing drain of a growing demand, too much attention cannot be paid to an undertaking in which seems to lie the greatest possible hope of preventing a further decrease without resort to very drastic legislative measures, and ultimately of effecting such an increase as will be capable of meeting the needs of a steadily increasing population.

In order to obtain some idea of the value of intensive planting it is necessary to select two areas which are administered under the same regulations, in one of which intensive planting has taken place, and in the other little or none. For this purpose the Canadian waters of Lake Erie and Lake Superior have been chosen, on the former of which the efforts of the Dominion Government fish hatcheries appear largely to have been centred, while in the latter no planting whatever has taken place, in the period selected, with the exception of a few hundred thousand fry on one occasion in the vicinity of Port Arthur, a present from the American authorities in return for the courtesy of being allowed to collect spawn from Canadian spawning beds during the close season. It must be noted, however, that in the case of Lake Superior an enormous body of deep water intervenes between the north and south shores, which the true whitefish will not cross, while in the case of Lake Erie, since practically the whole body of the lake is suitable for whitefish, there is no such intervening obstacle between the bulk of the Canadian and American fisheries, so that, although intensive planting on the American side has occurred in both lakes, it is only in Lake Erie that it will be likely to have been reflected in the Canadian fisheries, and, indeed, allowance must be made for this fact in considering the great divergence in the results disclosed.

Average Plants and Catch of Whitefish in the Canadian Waters of Lake Erie. Whitefish Area, 2,100 Square Miles.

Year.	Plant.	Pounds caught.
1892–1896	45,900,000	199,000
1897–1901	60,500,000	354,000
1902–1906	62,000,000	355,000

Average Plants and Catch of Whitefish in the Canadian Waters of Lake Superior. Whitefish Area, 3,600 Square Miles.

Year.	Plant.	Pounds caught.
1892–1896	.....	1,123,000
1897–1901	700,000	591,000
1902–1906	.....	462,000

These figures would seem to demonstrate that intensive planting is capable of producing great results.

It is not sufficient, however, to have arrived at this conclusion. There remains to be examined the extent to which these hatchery and planting operations must be carried to produce effective results. An examination of the records of the Canadian waters of Lake Ontario, or of the American waters of Lake Superior, two examples of fishery areas in which moderate planting operations have been conducted, will show that in both instances the catch of fish has decreased, in spite of an increase in the amounts of net used.

Average Yearly Plant, Catch and Fathoms of Net in Use in the Canadian Waters of Lake Ontario. Whitefish Area, 1,400 Square Miles.

Year.	Plant.	Catch.	Fathoms.
1892–1896	4,200,000	291,000	171,800
1897–1901	4,820,000	245,000	212,700
1902–1906	3,600,000	238,000	214,000

Average Yearly Plant, Catch and Fathoms of Net in Use in the American Waters of Lake Superior. Whitefish Area, 2,400 Square Miles.

Year.	Plant.	Catch.	Fathoms.
1892–1896	11,057,000	2,117,000	703,300
1897–1901	21,858,000	1,169,000	750,300
1902–1906	15,268,900	1,193,000	1,231,300

It would appear, then, to be demonstrated by the above two instances that in these particular waters the extent of the hatching and fry planting operations was insufficient in comparison with the amount of fishing being carried on.

From these two examples, taken in conjunction with the results obtained in Lake Erie, it would seem just to conclude that the effects of a plant should appear in a definite ratio on the fisheries, and that, consequently, it should be possible to determine what that ratio is. The practical difficulties in the way of such an investigation are, however, considerable, for, as it has already been pointed out, to arrive at definite results it is essential to consider fishery areas as a whole, and not according to the imaginary boundaries dividing the adjacent waters of states, provinces or nations. Thus, to determine definitely the ratio of plant to the square mile, or to the pound of fish caught, required to maintain decreasing fisheries to their existing capacity, it would be necessary to have the whitefish area of each lake or body of water systematically planted, for it is improbable that the local conditions of the individual areas would be sufficiently similar to produce like results in all of them. The greatest efforts in fry planting have, however, so far

taken place in American waters, where the division of control is so great as to have rendered such systematic statistical research work almost impossible up to the present, but on the Canadian side of the boundary, over which there is, broadly speaking, but one control, the only obstacle in its way would appear to be the absence of a sufficiency of hatcheries to produce positive results, for, although, as has been pointed out above, owing to the peculiar disposition of the whitefish area in Lake Erie, the enormous American plant would have to be taken into consideration in that lake, in most other cases the great bodies of water intervening between the bulk of the Canadian and American fishery areas would render such investigations both possible and conclusive.

It is interesting to note, however, that attempts have already been made to determine the ratio from the statistics available, and although the accuracy of the results obtained may not be altogether above suspicion, none the less they would appear to be most useful as indicating the approximate figures that may be expected. Mr. Paul Reighard, of the University of Michigan, in a most interesting paper delivered before the Fourth International Fishery Congress, worked it out as follows:

A plant of 30,000 per square mile of whitefish area, or of 100 per pound of whitefish caught, is correlated, under existing conditions, with an increase of 72 per cent. in the catch;

A plant of 10,000, or 32 to the pound of whitefish caught, with a practically stationary whitefish product; a plant of 2,200, or 11 to the pound of whitefish caught, with a decrease of 26 per cent. in the whitefish product; pointing out, however, that as the whitefish increased under intensive planting it was quite possible that a less plant than 100 to the pound of fish caught would suffice to maintain the fisheries.

Assuming the cost of producing fry to be 2 cents per 1,000, which in all probability is placing it considerably too high, if Mr. Reighard's figures be taken as approximately correct, this would bring the cost of producing 1,000 pounds of whitefish to $2. In view of the fact that the price paid to the fishermen at present is never less than 5 cents per pound of whitefish, it would appear that extensive hatchery operations could not but prove economically a most profitable enterprise, for of recent years the supply has never equalled the demand and the Canadian markets are still capable of very considerable expansion.

From the above it would seem to be established that practical and economically profitable results can be obtained by conducting fish hatchery operations on a large scale; that in view of the continued decrease in the Provincial fisheries, steps should at once be taken to establish considerable Provincial fish hatchery plants; and that, hand-in-hand with the establishment of such plants, scientific investigations should be made to determine the extent to which the annual production of the hatcheries must be carried to produce positive results throughout the Provincial fisheries.

Scientific Research.

Attention has already been called to the fact that scientific knowledge of the lives and habits of the fishes is all too meagre, and in the preceding paragraph the necessity was established for proper statistical research in order to discover the extent of the fish hatchery operations which it is advisable for the Province to undertake. It is obvious that to solve problems affecting the supply of wild animal life, the fundamental necessity is an accurate knowledge of the life, habits and environment of the animal in question, be it fowl, beast or fish, and this necessity cannot but be enhanced when considerable expenditures of public moneys are contemplated, or actually being born, in the effort to find a satisfactory solution. Most particularly so must this be the case with the fisheries, for the difficulties, which from the outset beset the path of the scientific investigator, indicate only too well that his task can be none too easy, and that, therefore, immediate and continued efforts in this direction are indispensable if the desired results are ever to be obtained.

The direction such investigation should take is, at first glance, apparent in so far as the purely mechanical end of the fish hatchery operations is concerned, and to the extent, also, of methodical statistical research and the study of the life histories of the various fishes. But the field is by no means limited to these. Fishes, like all the other creatures possessed of life, not only require food to support that life, but are subject to a multitude of scourges and ailments which may not only affect their continued existence, or their reproductive powers, but may seriously impair their value as food for man, to the extent, even, of rendering them positively harmful to him.

Thus it will be seen that the field of scientific knowledge must not only embrace the care of the eggs or fry under its immediate charge, but must also grapple with the lives of the fish hatched, after they have been placed in the waters, in order to assist them against the ravages of disease, by attacking and if possible destroying its causes, and also to secure for them an abundance of proper food at all stages of their existence, which, in its turn, must imply an accurate appreciation of submarine conditions and an intimate acquaintance with the lives of an infinity of aquatic plants, minute animals and insects.

There remains also to be determined the relation of fishes to each other. Some fishes are known to be cannibalistic, and predaceous in regard to other forms of fish life; while other fishes, such as the carp, are accused of devouring the immature of more valuable species although scientific support to such accusations has never been forthcoming. Some fishes again, such as the whitefish, which subsist chiefly on vegetable matter, such as is to be obtained on the bottoms of the areas which they inhabit, on insects and on the lesser varieties of mollusc and crustacean life, are known to be harmless; while others, such as the sturgeon and sucker, are accused of destructive spawn-eating propen-

sities, although their guilt has never scientifically been established. The sucker, indeed, furnishes a good example of the comparative ignorance of the attributes of many fishes at present existing, for while many authorities and practically all commercial fishermen will unhesitatingly classify the fish as a deliberate spawn-seeker and eater, other authorities, including Dr. Forbes, and the well-known Provincial ichthyologist, Mr. C. W. Nash, disclaim this propensity on the part of the sucker entirely. In fact careful examination of the stomachs of many suckers taken on or in the vicinity of spawning beds failed to disclose any other food than algæ, entomostraca and other low forms of animal life, while Mr. Nash, who also made the interesting experiment of keeping suckers, found that they refused at all times the spawn of other fishes, which was offered them, although they would greedily devour algæ, earthworms and various forms of insect life.

Before the institution of commercial fishing on a large scale apparently all the varieties of commercial fishes which now inhabit the waters (with the solitary exception of the imported carp), existed in them in great numbers, and it would appear, therefore, reasonable to assume that each species must have been assisting, to some extent, in preserving such a balance in the natural conditions prevailing below water as to render these suitable, not only for its own prolific existence, but for that of other varieties also; in fact, that a direct relationship did exist between the welfare of one variety and that of the other. On land the direct relationship between various forms of animal, insectivorous and vegetable life is receiving yearly ever-growing attention, some varieties being cultivated, preserved or introduced by reason of their beneficial influence or combative powers against some particular condition, while relentless war is being waged against other noxious species, often at enormous expense, but justified none the less by the great profit which it is known will accrue. Doubtless very similar conditions prevail below water as on land, but they are not at present understood. It is plain, however, that commercial fishery operations, when conducted vigorously against certain species and less vigorously or not at all against others, must sooner or later effect a considerable transformation in the normal conditions prevailing below water, by disturbing the natural balance. That this might easily result in a great increase in the numbers of more or less commercially useless varieties, such as the sucker, is but all too obvious, and if these fishes actually possess the harmful spawn-eating propensities attributed to them by some authorities, the direct baneful influence of their rapid multiplication on the numbers of the finer fishes can be readily appreciated. On the other hand, it is equally obvious that even such a fish as the sucker has its place in the scheme of nature, for it is well known that they were in great abundance when the white man first entered the country, so that, although in view of the effects of commercial fishing on the fisheries at large it might well be advisable to take steps to decrease the numbers of

suckers and other coarse fish of little commercial value, it would not be safe to jump to the conclusion that all such fishes could be ruthlessly destroyed with advantage. In fact it is a matter for most careful, scientific study.

It has been shown in a preceding section that the establishment of a considerable Provincial fish hatchery plant is an urgent necessity if the fisheries are to be improved or even only maintained on their present footing, and that the success which has attended fish hatchery operations in certain of the waters of the great lakes is sufficient of itself to warrant such an undertaking.

From the present section it may be, then, concluded that in entering on this business there exists a real necessity to arrange at the same time for the energetic prosecution of scientific research. In this regard it may, perhaps, not be amiss to recall the fact that while Ontario has as great an interest in the fisheries of the great lakes as all the American States combined, she has, as yet, with the single exception of Mr. C. W. Nash's check list of the fishes of the Province, published by the Department of Education, contributed nothing to the proper scientific understanding of them, a condition which can hardly be held to become her dignity or the enterprise of her responsible authorities.

The Licensing of Nets.

Attention is called in the Report of the Dominion Fisheries Commission on the Fisheries of the Georgian Bay to the apparent anomaly of charging a fixed license for a given quantity of nets, irrespective of the area in which this license is to be operative, and consequently irrespective of the catch, and it is recommended that, as a fair means of determining the value of a license, the catch should be taxed to the amount of $2 per ton of the finer species of fish and $1 per ton of the coarser varieties, the fishermen being required to make a sworn declaration as to their catch on an official form, which form, again, would have to be countersigned by the responsible government fishery official. In view of the fact that such a system would reverse the present system under which the value of the license is collected into the Treasury before it is issued, and that such a reversal is not altogether desirable, it is further suggested that the value of the license applied for be estimated on the catch of the previous season, and paid for before issuance on these terms, the balance in favor of or against the Government being adjusted when the final figures for the year have been compiled from the sworn returns of the fishermen and fishery overseers.

At the present time the value of the pound and gill net licenses in the Canadian waters of the great lakes is briefly as follows:

Pound Nets ..... $50.00 per net

GILL NETS, LAKE SUPERIOR AND LAKE HURON, NORTH CHANNEL AND GEORGIAN BAY.

Sail or Rowboats with not more than 6,000 yards of net	$10 00
Gasoline Launches with not more than 12,000 yards of net	25 00
Tugs with not more than 30,000 yards of net	75 00
Tugs with not more than 60,000 yards of net	150 00

LAKE ERIE.

Sail or Rowboats with not more than 2,000 yards of net	$25 00
Gasoline Launches with not more than 4,000 yards of net	75 00
Tugs with not more than 10,000 yards of net	250 00

LAKE ONTARIO.

Sail or Rowboats with not more than 4,000 yards of net	$10 00
Gasoline Launches with not more than 6,000 yards of net	25 00
Tugs with not more than 10,000 yards of net	50 00

BAY OF QUINTE.

Between the Bridge at Belleville and the Village of Prinyer.

Sail or Rowboats with not more than 2,000 yards of net	$25 00

The revenue derived from these licenses has been approximately as follows:

1908	$46,000
1909	56,000

What exact proportion of the expenditure of the Department of Game and Fisheries is solely debitable to the commercial fisheries it is impossible to determine, for a great many of its officials are largely concerned in the carrying out of other duties, such as the protection of the sporting fish, the collection of the non-resident anglers' tax and the protection of the game, while the same condition applies equally to the uses to which much of its equipment is put. It is plain, however, that if the expenditures on fish hatchery operations, which have been shown in previous sections of this report to be practically unavoidable if the fisheries are to be maintained, have to be undertaken, the Province cannot afford to do otherwise than collect as great a revenue from the commercial fisheries as they can reasonably bear, in order to meet, in part at least, this added charge.

Under the present system it is extremely doubtful whether the best results from the point of view of revenue are being obtained.

It is a matter of common knowledge that the Ontario fisheries of the great lakes are largely under the domination of a foreign corporation, and that, in consequence, the great bulk of the fish secured from these waters find their way to the American markets. It is perhaps not so well realized that the Government of the United States imposes a duty of ½ cent per pound on imported fish, and is, therefore, collecting yearly a very handsome revenue from the Canadian fisheries, whereas the Ontario Government, which has to bear the cost of protecting the fisheries, if not actually losing money on the transaction, is at least gaining no appreciable revenue therefrom, and at the same time in allowing

its commercial fisheries to be depleted to the advantage of a neighboring nation is failing to secure for the present population of the Province the benefits that should properly be derived from this great asset, or to assure a continuance of the same to future generations. In illustration of this state of affairs may be cited the results of an investigation conducted by a gentleman, who is much interested in these matters, in regard to one particular fishing station on Lake Superior. He computed that from the licenses issued to the fishermen operating from this station the Government secured a revenue of $310, and assumed that out of this sum would have to be provided the salary of the overseer, the cost and maintenance of his equipment and in addition some portion of the cost of the annual or bi-annual inspection carried out by a senior official of the Department of Game and Fisheries, pointing out that the sum available was none too ample for these various purposes. On the other hand he ascertained that from the duty levied on the fish imported from this station in the year of his investigation the Government of the United States derived a revenue of approximately $2,600.

The price paid to the few would-be independent Canadian net fishermen for their fish by the alien corporation which practically controls the output of the Canadian fisheries, is approximately 4 to 5 cents per pound, and the fish retails in the greater American markets at from 12 to 40 cents per pound, so that the profit to the corporation is apparently great. In addition to this, however, since the commercial control of the fisheries lies principally in the hands of a foreign corporation, it is but natural that citizens of a foreign nation should be largely concerned in its exploitation, so that as the matter stands to-day it would appear that while the cost of protection may be said to practically swallow up all the revenue derived from the fisheries, not only is the United States securing a considerable yearly revenue from them, the bulk of the profits and of the actual fish, but also no small proportion of the initial cost of capture, a situation which is obviously most unsatisfactory.

It would seem, then, but just and reasonable that those who derive the greatest benefit from the fisheries of the Province should be assessed for the privilege on a somewhat higher scale than is in force to-day.

In this regard the notorious fact must be noted that in a great many instances far greater lengths of gill nets are still made use of by tugs than are called for in their licenses, it being usually claimed that if the nets used were restricted to the legitimate amount, fishing operations would cease to be profitable. It is plainly not advisable that such a state of affairs should be permitted to continue. If it be deemed desirable to restrict the nets in a given area to the quantities called for on the licenses issued, and it is true that the present limitations of lengths prevent, in certain areas, commercially profitable operations, then there should obviously be issued a lesser number of licenses, sanctioning greater lengths for those areas, and all such cases should be promptly and carefully investigated by the Department responsible, but under no

Unreeling the Nets.

Herring Fishing.

circumstances should a deliberate infringement of the privileges granted by a license be tolerated, as is all too frequently the case to-day.

Reference was made at the commencement of this section to the recommendation made by the Georgian Bay Fisheries Commission in regard to the matter of assessing the value of licenses. It would seem that such a system would undoubtedly be more equitable on the commercial fishermen than that at present in vogue, and, inasmuch as the tax would be levied on the catch, and not merely on the class or extent of net used, the Government would derive a proportionate benefit from any measures it enacted, or any expenditures it undertook, which resulted in an increased annual production of fish. Moreover, by adjusting the tax to the necessary proportions, without causing any undue hardship it could plainly be made to be profitable from the point of view of revenue, as the following figures indicate:

Revenue From Net Licenses.

1908—$46,000 approximately (the Department was unable to furnish the exact figures).

Revenue Based on Estimated Catch.

1908—Fine Fish, 21,799,990 lbs. at $2	$43,600
1908—Coarse Fish, 5,800,651 lbs. at $1	5,800
Total Revenue	$49,400

The tax being placed at $2 per 1,000 pounds of fine fish and $1 per 1,000 pounds of coarser fish.

By licensing the shippers and buyers, and requiring from them a sworn declaration as to the amount of fish handled and from whom purchased, in addition to the sworn declarations, before referred to, obtained from the net fishermen and countersigned by the responsible fishery overseer, it would appear probable that a considerable proportion of the illicit netting, which is at present being carried on, would automatically be put a stop to, owing to the practical obstacle presented to men so engaged of disposing of their catch, a fact which would not only be beneficial to the fisheries, but would also tend to increase the revenue of the Government, for it must always be remembered in considering the available fishery statistics of the great lakes that a very considerable quantity of fish is removed yearly from the lakes by illicit means which is never accounted for, and that in certain localities the licensed men have been known to meet with but very poor success, owing entirely to the extensive and successful operation of trap nets and other illicit contrivances in the waters in which they pursued their vocation.

It would appear, however, that the fisheries might justly be expected to produce an even greater revenue than that obtainable by the method above indicated.

In dealing with the timber resources of the Province it has become customary, when throwing open limits to the public, to invite tenders

for them, or, in other words, to put them up to public auction. By this means a fair return for the privilege granted is assured to the public, for if the prices are obviously insufficient, it remains within the power of the Government to refuse the tenders, and under such conditions the general law of supply and demand will, in most cases, ensure a satisfactory figure being offered.

When the average cost of catching the fish, which may approximately be estimated at 3 cents per pound, all included, is compared with the average retail price of fish, 8 to 15 cents per pound at a conservative figure, it becomes plain that the concession granted by a fishing license has a considerable value, and, consequently, it would seem reasonable to conclude that there must exist therein a fair margin for public competition—that is, that a fee for the privilege should be obtainable over and above the regular tax on the catch, as suggested. It would seem, moreover, that as the value of the particular fishing concession would be liable to fluctuation, no better method than that of public tender could be devised to secure it. Such a system would obviously require a clear delimitation of the bounds of the concession, and a precise statement of the number of licenses, with privileges granted by them, that would be granted in any particular area.

The greatest desideratum in regard to the Provincial commercial fisheries is plainly that citizens of Ontario should, as far as possible, profit by catching the fish, and that the population of Ontario generally should profit to the greatest possible extent by the fish when it has been caught. Attention has, however, been called to the domination of a foreign corporation over the Provincial commercial fisheries, whereby a precisely opposite result is being at present attained. Evidently, if under prevailing conditions licenses were put up to auction, the bulk of them would, in all probability, still fall into the hands of the corporation referred to, to the detriment of the few independent Ontario fishermen, although even so a little additional revenue would be likely to accrue to the Government. If, however, it were possible to adjust matters so that the domination of the fish trust over the commercial fisheries of the Province could be curbed, and citizens of Ontario thereby encouraged to enter on the fishing business on a considerable scale as likely to prove a profitable venture to themselves, the system of putting fishing licenses up to auction, while enforcing a fixed tax on the catch, could not apparently but be profitable from the point of view of revenue, as an incentive to legitimate competition and thereby to trade, and, lastly, as an assurance that the exploitation of the fisheries would ultimately fall into the hands of an enterprising class of citizens of the Province. Various methods of producing such a situation will be discussed in a succeeding paragraph.

The main difficulties which would be encountered in introducing the system lie, apparently, in the facts (*a*) that the commercial fishing business has to be learned like any other vocation, more especially so in

proportion as the water area increases in size, and that, consequently, it is probably more economical, in the case of large water areas at least, to encourage the development of a distinct class of commercial fishermen than to jeopardize the existence of such a class through the intrusion of others, ignorant of the business, but attracted by its speculative possibilities; (*b*) that after the elimination of the monopolies the uncertainty of obtaining licenses might deter enterprising provincial companies or individual fishermen from acquiring a sufficiency of nets or from erecting the freezing and storage plants necessary to conduct the business; (*c*) that considerable labor and expense would be involved in advertising for tenders; (*d*) that there are no doubt a number of men in the Province who, while possessed of little or no resources other than those obtained annually as the result of commercial fishing, have pursued their calling so long and have attained such an age that it would be impossible for them to turn to other means of livelihood in the event of their being unsuccessful in tendering for a license; (*e*) that if discrimination were instituted in one case—that is, if a higher tender was refused in favor of a lower it would open the road to all the evils of political patronage and influence. Undoubtedly some means of protection for the old fishermen would have to be devised, but this could easily be effected by refraining from putting up to tender the licenses of those who had engaged in commercial fishing in the Province any stated number of years. In regard, also, to the labor and expense involved in placing the licenses up to tender, these could be greatly lightened by fixing a term of years over which the license tendered for would be valid, subject, of course, to the licensee keeping within the law, and it is apparent that the cost of this small franchise could be expected to operate in the direction of securing a better observance of the laws, seeing that the licensee would have more at stake. How far, however, the other objections to the system would counterbalance its advantage can only be a matter of opinion and conjecture, but the privilege granted by a commercial fishing license is so great, and the advantages of such a system so attractive from many points of view, that, under proper administration of the fisheries, it might well be worth while at least to make an experiment in this direction.

It may be considered, then, from this section that the commercial fisheries should produce a greater revenue than they do at present; that a tax on the catch of fish would be more equitable on the fishermen than a license in proportion to the class or amount of net used; that the establishment of reasonable competition in the fishery business is greatly to be desired, and that such competition can best be assured by first breaking up the domination now exercised by an alien corporation over the commercial fisheries of the Province.

Various Methods by which the Provincial Fisheries can be Rehabilitated, and a Strong Fish Market Developed in Ontario.

The situation disclosed in preceding sections renders it apparent that at the present time the Province is not deriving even a reasonable amount of benefit from the possession of immense fisheries, either in revenue or fish food, and that, worse still, the once prolific fisheries are dwindling with alarming rapidity. It has been shown, also, that by a strict enforcement of the close season, by seeing to it that the dates of the close season tally with the breeding seasons of the various fishes, by the establishment of a series of fish hatchery plants and other measures, a great deal can be accomplished in the direction of preventing a further decrease, and ultimately of effecting an actual increase, in the product of the fisheries, but it has also been pointed out that so long as an alien corporation remains in practical control of the commercial output of the fisheries, so long will the fish markets of the Province be of secondary importance in comparison with those of greater American cities, and, according to the measure of starvation that must prevail under such conditions, so will their growth continue to be stultified.

Fish companies and individual fishermen, who would be independent, have little chance of remaining so for any length of time. The trust, through its agents, controls the bulk of the plant existent in the Province which is indispensable for the conducting of the fishery business. It controls, also, in many instances the shipping facilities and the ordinary channels of trade. For a time the independent fish company or fishermen may succeed in disposing of their catch locally, but in Ontario there is at present but small demand for the coarser varieties of fish, and at certain seasons of the year these comprise the bulk of the fishermen's catch. Then, if they should desire to dispose of their catch outside of their immediate locality, they soon are swept into the toils of the corporation, for unless they are willing to sell in the future all their catch to it, the trust refuses to purchase any of the catch at all. It appears, indeed, that at no time will the corporation or its agents deal with the independent men other than on the terms "all or nothing," so that unless the company or fishermen are willing to lose their profits and the fruits of their labors, or unless they can command sufficient capital to make storage, shipping and market arrangements for themselves, which in some cases has been attempted but only with indifferent and short-lived success, they must inevitably, sooner or later, bow to the dictates of the corporation, and thus allow themselves to be swallowed up by it. In certain cases definite contracts are drawn up, binding the fishermen to sell only to the agents of the trust, and it seems more than probable that in many cases also the corporation supplies the fishermen with their nets, boats and other appliances, extracting part payment in kind, but holding always a sufficient balance over their heads as to ensure the continuance of their allegiance.

Contract or no contract, however, the result is the same, namely, that the truly independent fish company or fishermen cannot exist under the present conditions of the fishery trade for any length of time, and it must be clearly understood that the possession of a Canadian sounding title by a fish company is no guarantee either of Canadian proprietorship or independency. In fact, the reverse is, as a rule, the case.

It is plainly necessary, therefore, to examine carefully into what available means present themselves of effecting such a radical alteration in the situation as to place it on an economically sound basis, or, in other words, of breaking the domination of the American fish trust, placing the control of the fish crop in the hands of the citizens of the Province, and developing a proper fish market throughout Ontario, so that the people at large may profit by their fisheries and not be robbed of the profit for the benefit of the United States, while at the same time endeavoring to improve the general condition of the fisheries to the greatest possible extent.

Markets cannot be created in a day, even though the advantage of their establishment and rapid development were patent to everyone, neither can a great vested interest be attacked and shorn of its power without a considerable outcry being raised. The achievement of both objectives in the case of the fisheries would obviously involve the formulation of a strong, clear-cut policy, embracing the fundamental principles of conservation, economic exploitation and distribution, and the systematic and consistent execution of this policy over a period of years. Such a policy can only be evolved by a consideration of all the problems presented, without regard to the various authorities who may be concerned in its initial or subsequent introduction.

The control of the Canadian fisheries of the great lakes, however, is divided between the Dominion and Provincial Governments in such a way as to render impossible the adoption of a scheme, for the conservation and improvement of the fisheries and the development and regulation of an Ontario fish market, at all adequate to the necessities of the case, without considerable collaboration between them, and thus, even though, in all probability, the co-operation of the Dominion Government is to be anticipated in the event of a forceful fisheries policy being adopted by the Provincial Government, it becomes necessary, not only to inquire into the methods available for obtaining the desired results, but also as to how far these fall within the scope of Provincial legislation, and as to where it will be necessary to invoke the aid of the Dominion Government. Consequently the various available measures will first be discussed, and subsequently the relative powers of the two governments in regard to their enactment.

Prohibition of Export.

It has been pointed out that the great bulk of the product of the great lake fisheries at present finds its way into the markets of the

United States; 95 per cent., in fact, would in all probability prove to be a fairly accurate estimate. It is evident, therefore, that in such a measure as the prohibition of export there must, under existing conditions, lie great capabilities of very materially reducing the annual fish crop for a period of years, more especially in view of the fact already brought to notice that, although the potentialities of a great fish market in Ontario are apparent, actually the existing fish market is still in the most elementary stage of development.

It must also be equally clear that the indirect effect of such a measure could not but be the evolution of a far greater demand for fish throughout the Province, for prices would inevitably fall during the first periods of its enforcement, owing to the fact that many more men are engaged in the fishing business at present, and would probably be wishful of continuing it, than the demand under such conditions would warrant for at least several years to come, and consequently the surplus of supply over demand would bring about the usual result, a considerable reduction in values.

That the general public would only too joyfully take advantage of such a situation, is perfectly certain, and it is equally sure that the education of the general public to the value of fish food, or, in other words, the creation of a greater demand and thereby the upbuilding of a great Provincial fish market, is economically sound from the point of view of both business and health.

The introduction of such a measure, applicable to all classes of fish, would obviously disorganize the existing arrangements of the fish trust, and it would be compelled to seek other channels of supply, if the demands of its present markets were to continue to be filled. But with the troubles of this corporation the Province has no concern. It is true that the trust might commence to interest itself in the exploitation of the Ontario market, and thus continue to maintain its grip on the product of the fisheries to a limited extent, but even so, at least the citizens of the Province would profit by their fish to the extent of consuming them, a privilege which, broadly speaking, they are denied to-day.

There is no doubt but that the enactment of such a measure would meet with a storm of protest from the interests concerned, and from the tools employed by them in the prosecution of their business, the commercial net fishermen, for it is certain that the former would not relinquish one of its main sources of supply without making a great effort to retain it, and that it would be made to appear to the latter that their vocation and means of livelihood were being wantonly attacked. That for a time at least many of the net fishermen would have to seek other occupations cannot be denied, and it would be necessary to give ample notice of such a measure so as to enable the men to make suitable arrangements, or possibly even to purchase from them at an equitable valuation their boats, gear and other equipment, where such were beyond doubt the actual property of the men, but it must be remembered that the average

annual profit to the man who does the actual fishing lies somewhere between $400 and $800 only, so that, although work is conducted during certain portions of the year only, and there are in consequence periods of idleness, which doubtless lend an additional attraction to the life in the view of many of those engaged in it, none the less it can hardly be deemed a profitable occupation in comparison with others under the conditions in which it exists to-day. There is, moreover, plenty of room for those who would have to abandon their calling in other walks of life in this Province, so that there would be no real hardship to them, and it would seem that the at least temporary disappearance of some proportion of them from this business could not but result in an amelioration of the condition of those who remained in it, seeing that what profits there were in the business would be divided amongst a less number of men, thus tending to raise the standard of life in the classes which engage in fishing, and creating a more remunerative and engaging prospect for those who would enter or re-enter this calling in due course as the necessities of a growing Ontario market required them.

It might be argued that if total prohibition of export were introduced for a term of years, there would be such a rapid increase in the numbers of coarse and predaceous fishes, owing to the lack of a market for these at least at first, that the more valuable and defenceless species, such as the whitefish, would derive very little actual benefit from the measure. It must be remembered, however, that total prohibition of export would, in all probability, only be introduced as one plank in a broad scheme for the conservation and development of the fisheries, and that accompanying it there would be, also, instituted an efficient system of fish hatcheries, whose first and chiefest attention would obviously be devoted to the more valuable fishes. It is indisputable, as has been shown in a preceding section, that the fish hatcheries can by modern scientific methods hatch a far greater percentage of the eggs of the parent fish than would be effected under natural conditions, and consequently, as the hatching system became perfected, the number of young fishes in the water as the result of one season's spawning would be vastly greater than the average now being attained by the same number of parent fish. This alone would seem to be sufficient to counteract the ill effects of giving the coarser and predaceous varieties even a somewhat protracted period of security from the American markets.

The principle of the prohibition of export, however, is not only capable of general application to the product of the fisheries, but in a more restricted sense to individual varieties of fish. Indeed, the alarming decrease in the annual catch of whitefish caused the Georgian Bay Fisheries Commission to recommend such a measure to the Dominion Government in regard to that particular species. Naturally, if the export of one or two varieties were prohibited by legislation, the fish trust could continue to purchase from the fishermen all their catch exclusive of the prohibited varieties, and probably would do so, so that,

while the Ontario market was profiting to the extent of one or two of the finer varieties of fish, the great bulk of the other fishes would still be exported to the States.

By partial prohibition of export, therefore, unsupported by other measures, it would seem that not only would the power of the trust remain unshaken to a great extent, but that also the Ontario market would not receive the requisite impetus, for in dealing with such sources of food supply as the fisheries it is evidently necessary to take into account the requirements of all classes of the community, and to accomplish this, equal attention would have to be paid to the coarse as to the finer varieties of fish, for the former will in all probability always be the cheaper and, therefore, in greater demand by a considerable section of the population.

It must also be noted that the prohibition of export of particular varieties only would entail very strict supervision of shipments for export. The methods of packing fish in deep boxes and barrels are such that inspection is by no means easy at any time. It is well known, for instance, that no small numbers of black bass, the export of which sporting fish has already been prohibited, at present find their way to the fish markets of the States from certain localities, concealed in shipments of coarser fish. To make the protection of particular varieties of fish effective, in fact as in law, would appear to necessitate, therefore, a more thorough and searching inspection being carried out by a more conscientious and efficient body of officials than under present conditions is at all feasible.

If, however, such alterations were effected in the personnel and methods of the Department concerned as to make effective inspection possible of execution, and at the same time a method could be devised by which the Provincial fish market could be fostered in all classes of fish in spite of a continued export of large quantities of the coarser varieties to the already established markets for them in the States, it would seem that partial prohibition might have some weighty advantages over total prohibition, for in the first place it would not disorganize so abruptly the existing fishery business, and consequently would meet with less opposition, and secondly it would not leave in any doubt the possible undue increase in coarse fish referred to earlier in this section.

In any case there can be little doubt but that prohibition of export, even if applied only in modified form, would be a powerful factor in remedying the present deplorable condition both of Ontario's fisheries and of her fish market.

A Provincial Fish Agency.

The condition under which the fisheries are at present being conducted have already been indicated earlier in this report, and attention has been drawn to the fact that under these conditions healthy compe-

tition is practically eliminated, the yearly revenue of the majority of the fishermen is kept at a very low figure, and the fisherman himself becomes little more than the paid servant of the trust.

In other fish markets, such as those of the American Atlantic Fisheries, a situation more favourable to the net fisherman exists, inasmuch as there have become established certain firms who receive and market the fish of the individual fishermen on a fixed commission basis, and consequently the fisherman retains his independence and is in a position to profit directly by the fluctuations of the market, and a greater incentive is thereby afforded to initiative and enterprise. The existence of several firms in this commission business ensures competition and, consequently, a fair deal to the fishermen. Such a system, apparently, once prevailed over certain portions of the great lake fisheries, but it has completely disappeared in the evolution of the fish trust.

It is clear that the great bulk of the ordinary net fishermen could individually never succeed in storing, shipping and marketing their catch to advantage, for even were funds available, which is usually far from being the case, the very nature of their occupation precludes the possibility of their having sufficient leisure to attend satisfactorily to such details. Consequently, the presence of some form of middlemen who will receive, store and market the fish, either by direct purchase or on commission, would appear indispensable in connection with this business. That under normal conditions the competitive form of middleman, as represented by the commission houses of New York, is more equitable than the autocratic form, as represented by what might be termed the Chicago Fish Trust, both from the point of view of the fisherman and the consumer, would seem highly probable, but it is plain that if the profits of such commission houses could be reduced to a minimum, so as to but little more than cover the cost of operation, the profit to both fisherman and consumer would be correspondingly greater. This could be achieved only by the Government undertaking the work of the commission houses, or in other words, by the establishment of a Government Fish Agency. A strong plea in favour of such a measure is to be found in the report of the Georgian Bay Fisheries Commission, and, as no more clear or concise explanation of its advantages could very well be constructed, it is quoted at length:—

"A fish agency, or several such agencies, would be a much simpler matter (i.e. than the successful Dominion Government sea-fish dryer at Souris, P.E.I.). The agent would merely act as receiver of the fish, as consignee from the fishermen, and pay them at current rates on the plan adopted at Souris, or at the government fish reduction works at various Atlantic points; he would place them in the Government refrigerator, unless the market required the fish at once, and would thus fill the orders as they reached him from the various markets in Canada and the United States. The fish agency would act as middleman between the fisherman and the market buyers, and would leave out of

consideration the large monopolies, who seem to crush out all smaller enterprises and fair competition. These unscrupulous combines, who try, and with some success, owing to the lethargy of the public and its indifference to its best interests, to monopolize the whole fish business on both sides of the line; keep the fishermen in their clutches; dictate the price of fish in the wholesale and retail markets, and, from a Canadian point of view, work ruin to the fishing population and the fishing industries.

At least five advantages would follow from a fish agency scheme:—

(1) The control of the United States combines and monopolies would cease.

(2) The fisherman would have a central point to which he could with confidence send his catch of fish.

(3) The fisherman could rely on receiving full value for his fish, based on the current market prices.

(4) No waste of fish would occur, as the surplus of such fish as were not at the time in demand would be stored in the refrigerator until the demand came at a later date.

(5) The Canadian demand for fish would be met, and the large surplus would reach the United States markets. The present high price would allow of the payment of the duty imposed by the United States. Pickerel, it may be stated, have recently brought the surprising price in Chicago of forty cents per pound. Of course, the Canadian demand for our own fish would first be met before any foreign buyers were supplied."

It will be seen from the above extract what a powerful means would be afforded by such an agency, both for developing an adequate fish market in Ontario and for regaining commercial control of the fisheries by breaking the power of the fish trust, for not only would Ontario demands naturally be met before those of outside or foreign markets, but that demand could at the same time be carefully fostered and cultivated, and also, with sufficient storage appliances at its disposal, the Government would be entirely independent of the trust for securing its markets, and thus the domination and dictation of the trust would at one blow be annihilated. Moreover, from the existence in other markets of several prosperous commission houses in this line of business, it is obvious that, within reasonable bounds, the enterprise could not but be as profitable as it was deemed advisable to make it.

The effect of such a scheme in conjunction with that of partial prohibition of export is ably recited by the Georgian Bay Fisheries Com-

mission, with especial reference to the whitefish, and a further quotation from that report is, therefore, made:—

"As we have pointed out, the whitefish in the Georgian Bay, and in fact all over Canada, so far as our knowledge and observation teaches us, is becoming almost depleted, and there is no one but who will say that the adoption of any measure, however radical it may be, which will preserve and increase the whitefish of Canada, is justifiable. The only class who can at all complain of such a measure would be United States citizens, and a handful of fishermen in Canada. As to the first class, we need not concern ourselves, and as to the fishermen, we firmly believe they will get in any event as high a price for the whitefish sold in Canada as they are now paid by the monopolistic companies who control their catch. That this measure would redound to the benefit of the Canadian citizen goes without question. We have met with innumerable complaints from all quarters of the Province that Canadians cannot get Canadian fish to eat, and the extraordinary fact has been brought out beyond dispute that a large percentage of the Canadian fish which is used by the Canadian consumer is caught in Canadian waters, goes to the United States markets, and is then brought back to Canada and sold. The great objection which the fishermen will have to the measure is that there is no fish market in Canada to consume all the whitefish which is caught, but we believe that such is not the case, and that, owing to the fast diminishing catch of whitefish which is occurring from year to year, and the vastly increasing population which is pouring into Canada, the Canadian consumer, if afforded opportunities of purchasing, will totally consume all the whitefish catch of the Dominion of Canada, and will pay as good a price as can be had for the fish to-day. More particularly, if the government fish agencies which we have recommended are established, will it assist the fisherman in disposing of his catch. There is no doubt that after the measure should become law, a great number of fishermen will build their own ice-houses and their own fishing stations, and not be dependent on the American companies for the necessities of their calling. But, for those who do not, if the government agencies are established, to which the fisherman knows that he can at once, and without extra trouble, dispose of his whitefish, it will, we believe, detract very materially, and in fact do away altogether with, any objection he might raise to the prohibition of the export of whitefish.

. . . . . .

If this recommendation be carried out, it must also be remembered that the American market is still open for the vast quantities of fish, forming two-thirds of the total catch of the Canadian fishermen, of trout and pickerel and other fish of coarser varieties, which find a ready sale in their markets; and we believe also that, as the Americans are dependent on our fish, the cutting off of one-third of their imports from Canada will necessarily raise the price to the Canadian catcher of those fish which can be taken into the United States."

It would seem, therefore, that through the operation of the two schemes together, the establishment of Provincial Fish Agencies and the prohibition of the export of certain varieties, a maximum of beneficial results could be obtained at a minimum of disorganization and friction, but that in any case the organization and establishment of Provincial Fish Agencies could not fail to be extremely advantageous, alike to the growth of the Provincial fish trade and to the citizens of the Province of Ontario.

The Imposition of an Export Duty on Fish.

The chief advantage to be derived from the imposition of an export duty on fish would appear to be the revenue that would thus be obtained. It has been pointed out that at the present time the citizens of the United States are profiting to a far greater extent than the Canadians, both in revenue and in fish, from the Canadian fisheries of the great lakes, so that, although the markets of the United States are so firmly established and insistent in their demands for supply that in all probability they would still require all the Canadian fish that they could secure in spite of an export duty, the tax in itself would at least serve as a means of securing for the Canadians a reasonable compensation for the loss of the bulk of their fish.

It is improbable that the duty would in any serious way disturb the power of the fish trust, for that corporation could confidently be relied on to extract the amount of the tax from the consumer in the United States, who, to judge by the price of forty cents per pound, previously noted as having been paid in Chicago for pickerel, apparently is prepared to stand the cost, no matter almost what it may be, provided only that he gets the fish.

Similarly the production of the fisheries would not be seriously affected, as the demand would apparently continue to be as great as ever in the foreign markets, and this cause also would tend to prevent any general improvement in the condition of the Ontario fish market.

It is evident, however, that the above remarks are only applicable to a comparatively moderate tax, for there must exist a limit in cost which would break even the demands of the established American fish markets, and there is obviously no limit to the amount to which the export duty could be raised if desired. If such a measure, however, were contemplated, it would probably be on a broad general basis comprising all classes of fish, with an additional charge for the export of certain of the fine varieties of fish. In such a case the finer varieties would derive an advantage if the charge were raised sufficiently to effect a decrease in the demands of the American markets, and it would seem reasonable also to suppose that, in this event, the decrease in the quantities shipped to the American markets might well result in the creation of new and better markets in Ontario. The duty would have to be placed very high indeed, however, to achieve such desirable results.

In conjunction with the establishment of Provincial fish agencies, the imposition of an export duty on a sliding scale might prove advantageous in dealing with the demands from across the border, although it could never be quite so efficacious a measure as the total prohibition of export of the varieties it was desired to protect. It must, moreover, be remembered that, although it is most highly desirable to break the American commercial control of Ontario's fisheries, it would not be the part of wisdom to destroy the American markets for Ontario fish altogether, for during many years to come there should be, under a proper system, profit to be made by citizens of the Province in selling a considerable surplus catch of at least coarse fish to the Americans, which it is quite proper should be removed from the waters each year, but which otherwise would either be a drug on the Ontario market or else, perhaps, completely wasted.

It must also be noted that the remarks made in a previous section as to the inspection of fish would apply with great force should an export duty on fish ever be imposed, for fish piracy could be counted on to increase, and smuggling and juggling in varieties to be undertaken on a large scale, so that, without very strict and efficient inspection carried out by honest and capable officials, neither would the Government profit to the fullest extent in the matter of revenue, nor would the Provincial fish market or the fisheries themselves derive the fullest benefits to be anticipated from such a measure.

THE POWERS OF THE DOMINION AND PROVINCIAL GOVERNMENTS IN RELATION TO THE COMMERCIAL FISHERIES OF THE GREAT LAKES.

Under existing conditions, through the operation of the British North America Act, the Dominion of Canada is governed and administered as a whole by the Federal Government at Ottawa, and separately and individually in Provinces by the respective governments of the various Provinces. Naturally enough the British North America Act did not provide for all the contingencies which should eventually arise through the development of so vast a country in its allocation of power between the Dominion and Provincial Governments, but, broadly speaking, the lands, forests and waters within the boundaries of the respective Provinces were handed over to their governments to administer and govern, while to the Dominion Government was reserved the power of intervening in such administration in respect of measures affecting Canada as a whole.

In so far as the fisheries were concerned, whether maritime or inland, the attitude was taken by the Dominion Government that these were national, and consequently to be administered by federal authority. This view was ultimately accepted both by British Columbia and the

Maritime Provinces. The Canadian Fisheries of the great lakes, however, are conterminous with the southern boundaries of Ontario, and as these fisheries developed in value, and more citizens of the Province became engaged in their exploitation, it followed that Ontario's interest in these fisheries considerably augmented. Lying exclusively on the borders of her territory, it seemed to her government that Ontario was entitled to considerable voice in the administration of these fisheries. As time went on various matters of dispute in regard to them arose between the Government of Ontario and the Dominion Government, such an impasse being finally reached that the whole question was referred to the Privy Council for decision. On the basis of that decision was enacted the present system of what may be termed dual control.

Under this system the Dominion Government may, generally speaking, be said to regulate the conditions under which the fisheries are conducted, while the proprietory rights in relation to the fishes are vested in the Provincial Government, which issues licenses to those desirous of engaging in fishing operations.

It is not within the scope of this report to discuss the merits of this system, or to attempt to interpret in detail those points which, through decision of the Privy Council, still remain open to doubt and contention, but in view of the fact that glaring evils do exist in connection with the fisheries, which only very drastic measures can adequately remedy, it is necessary in this report to investigate carefully the extent to which Provincial legislation could alone institute such measures, without encroaching on the prerogative of the Dominion Government, and to what extent it would be necessary to invoke the aid of the Dominion Government in order to carry them into effect.

AN EFFICIENT PERSONNEL AND EQUIPMENT FOR A FISHERIES PROTECTIVE SERVICE.

In the Interim Report of this Commission attention was strongly called to the fact that both the personnel and equipment of the existing Provincial Fisheries Protective Service were in a lamentable state of inefficiency, and certain general recommendations were made on these heads with a view to remedying this state of affairs.

It is plain that in so far as the officials are concerned there can be no question either as to the right of the Provincial Government to appoint to these positions whomsoever it may select, nor as to the advisability of selecting for these posts only such men as are physically and morally suitable for them; but in regard to the equipment, the division of control of the fisheries somewhat complicates the question and appears to render a further examination into it necessary.

At the present time the Dominion Government maintains one large cruiser and employs a limited number of fishery inspectors to see that

Herring Fishing, Lake Huron.

the Dominion rulings in regard to the fisheries are observed, but the actual enforcement of the laws rests chiefly with the Provincial Government, which maintains a large staff of wardens, fishery overseers and inspectors, and incurs considerable expenditure in regard to the equipment for these officials, for this purpose. The large cruiser of the Dominion Government is eminently suitable for patrol work on the high seas of the great lakes, and for the supervision of the fish tugs engaged in operations over deep waters. With the exception of the "Edna Ivan," an ancient fish tug with indifferent cabin accommodation built upon it, which the Provincial Government again leased this year, the Province is possessed of no equipment in the very least degree suitable for this class of work, and, indeed, it would seem that such work, which is practically a policing of the fisheries against international fishing piracy, is distinctly the province of the Dominion Government. But in regard to all the vast extent of less exposed waters in which fishing operations are conducted, the Provincial Government, as has been pointed out, has assumed the burden of enforcing the general Dominion regulations in addition to those governing its own domestic arrangements, and by doing so has furnished conclusive proof not only of the very great importance it attaches to the protection of the fisheries, but also of a strong desire to retain as much control as possible over an interest which can affect to such a great degree the welfare of its citizens.

As previously recorded in this report, however, there has recently been drawn up a series of international regulations between Great Britain and the United States in regard to the fisheries of the great lakes, which, when promulgated, are to apply equally on both sides of the boundary, and there seems to be little doubt but that promulgation of these regulations will not long be delayed. The Commissioner who represented the United States in these negotiations has recommended to the United States Government that a suitable staff and equipment be provided and maintained by the Federal Government to enforce these regulations in so far as the American waters are concerned, and it would seem, therefore, reasonable to suppose that the Dominion Government should contemplate some such step also, unless very well assured that the Government of Ontario is prepared and willing adequately to undertake this work.

That the present equipment at the disposal of the Provincial Government is almost entirely unsuitable to the purposes on which it is employed has been set forth in no uncertain terms in the Interim Report of this Commission. In the face of a modern and efficient equipment, such as recommended to the Federal Government of the United States, it is evident that its lamentable deficiencies would become only the more apparent.

The whole question then would seem to resolve itself into a matter of policy on the part of the Provincial Government, to decide in fact

whether it is expedient to spend the money necessary for the acquisition of an ample, suitable and efficient equipment, in order to retain control of the enforcement of the laws over what are practically its own fisheries, or whether to let this control pass altogether into the hands of the Dominion Government.

Duplication of the fisheries protective service would appear to be unnecessary and wasteful, and yet, seeing that the Dominion Government has entered upon an engagement with the Government of the United States to enforce certain regulations over the fisheries, it would seem unavoidable that it should take the matter into its own hands in the event of the Provincial Government being unwilling to adopt a progressive and suitable policy, both in regard to the selection of a staff and the provision of a proper equipment. Even should the Dominion Government decide to increase its staff and equipment, after promulgation of the international regulations, there can be little doubt but that the announcement by the Provincial Government, of its intention materially to improve its fishery protective service on modern lines, would be taken into consideration in determining the extent of such increase. In any case it is apparent that the more efficient and adequate the Provincial service, the more will the actual control of the fisheries continue to be exercised by the Province.

THE ESTABLISHMENT OF FISH HATCHERIES AND FISH AGENCIES.

In the United States practically all the individual States now maintain very extensive hatchery plants of their own, in addition to those supported by the Federal Government. It is plainly a purely domestic matter for each Province or State to decide for itself, and there can be no question as to the power of the Government of Ontario to do precisely as it chooses in this regard.

Similarly, the establishment of a Provincial Fish Agency would be a purely domestic arrangement, and as such within the absolute jurisdiction of the Provincial Government.

The Prohibition of Export of Fish.

The decision of the Privy Council in regard to the division of control in the matter of the great lake fisheries was a direct interpretation of the provisions of the British North America Act, and it was definitely established by this decision that the product of the great lake fisheries was the property of the Province, irrespective of whether or not the Dominion Government should see fit to levy a tax on the fisheries. The licenses issued to the commercial net fishermen by the Province are endorsed with the dates and areas for which the licenses are valid and other matters

such as may from time to time be necessary, although, of course, such licenses are issued only with the understanding that fishing shall be carried on under the general rules and regulations enacted by the Dominion Government. The possession of a license, therefore, presumably entitles the licensee to the absolute possession of such fish as he may legally catch while fishing under the Dominion regulations and further restrictions of the Province, so that he is entitled to market his catch where and how he pleases. There is, however, no apparent reason why the license should not be endorsed with a provision to the effect that the fish, or certain specific classes of fish, must only be sold for home consumption, which, plainly, would be tantamount to a prohibition of export of the varieties of fish referred to. An analogous endorsement of a license occurs in the case of timber limits on Crown lands, the provision being to the effect that raw timber shall not be exported but must first be milled in the Province, and it is difficult to conceive that there should be any legal differentiation between the products of the forests and the fisheries, in so far as Provincial legislative powers are concerned, seeing that both, under the British North America Act, are the property of the Province, and consequently within Provincial jurisdiction.

In the case of the timber an Act was passed forbidding the export of raw timber cut on Crown lands, so that in the matter of restricting the sale of certain fishes to the home market a similar course might possibly be adopted by the Provincial Legislature, that is, indirect prohibition of export legislation might be introduced, the particular provisions of the Act in respect to the non-export of certain varieties of fish being, as in the case of timber, endorsed on each license issued.

A difficulty might arise through the actions of middlemen who, having purchased the fish from the fishermen on the understanding that it was for home consumption, might none the less decide to ship it abroad. In fact, under present conditions some such action on the part of the monopolies could reasonably be anticipated. Hence, to make the measure effective under Provincial Law, it would appear necessary to license the middlemen and retail fish dealers, and to endorse their licenses with a provision similar to that on the license of the commercial net fishermen. The Provincial Government can, of course, put under license any business or occupation it may select, and the endorsation of the license in the second and third channels of trade with a non-export or home consumption provision would clearly be valid if it were so in the case of the first, namely the commercial net fishermen.

Under the British North America Act are defined the jurisdictions of the Dominion and Provinces, but it occurs occasionally that, while one section apparently places a matter within the jurisdiction of the Province, another section can be interpreted as placing the same matter under Dominion authority. In such cases, if the question were contested, the Dominion ruling would apparently be held to prevail.

In regard to the question under review, although as has been shown the Province can possibly enact indirect legislation for the prohibition of the export of fishes, and certainly can virtually effect such prohibition of export by the endorsation of the licenses issued to the fishermen, there seems nevertheless to be little doubt that under the British North America Act the Dominion Government has authority to enact the prohibition of any or all classes of fish. Already Dominion legislation forbids the export of black bass, mascalonge and speckled trout. The Dominion authority to enact the measures prohibiting the export of these fishes has never been challenged in the courts, so that the action of the Dominion Government in these cases cannot be held to have established a conclusive precedent, but the acquiescence of the Provincial Government in the measures would at least tend to show tacit acknowledgement on its part of their validity, and it is obvious that there can be no legal distinction between sporting and commercial fishes in so far as jurisdiction is concerned.

A Dominion enactment would naturally affect all classes of the community, and this would put a stop to all legal exportation without recourse to the endorsation of the licenses issued to fishermen and fish dealers. It is evident also that whether enacted under Dominion or Provincial legislation, the greater the percentage of the total Ontario catch that was handled by a Provincial Fish Agency, the easier would become the enforcement of such a measure.

Close Seasons, a Close Period, and Close Areas.

There is no question that the power of enacting close seasons falls exclusively within the jurisdiction of the Dominion Government. Attention has been called to the fact that, owing to the difference in latitude and climatic conditions, the present dates of the close seasons do not tally in many localities with the actual dates of spawning. The general distribution of the fisheries of the great lakes renders it, indeed, practically impossible to fix a short period for each variety of fish which will cover the widely divergent dates of spawning in all the different lakes, although no such difficulty would present itself if the duration of the close seasons were materially increased, as has been deemed advisable by many authorities, and as was recommended to the Dominion Government by the Georgian Bay Fisheries Commission in regard to the whitefish.

While, however, the power of the Dominion Government to fix such close seasons as its wisdom may direct is incontestable, and such seasons could not in any way be abbreviated by the Provincial Government, it is apparently within the powers of the Provincial Government to add to the Dominion close seasons, if it should so desire, by endorsing the commercial net licenses with dates which would make them valid for a shorter period than that allowed under Dominion regulation. Such at least is the opinion of the present Deputy Attorney-General of the

Province, Mr. J. R. Cartwright. If this be so, the Province evidently has it within its power to right the present unsatisfactory state of affairs, for it cannot be claimed that the Dominion dates are not suitable to some, at least, of the fishing areas of the great lakes, or that in a single instance they err either in commencing too soon or in being unduly prolonged.

A study of local conditions would appear then to be all that is necessary to enable the Province to institute close seasons which would tally with the actual dates of spawning in each individual locality.

It is further evident that by endorsing the licenses to cover the earliest possible dates at which spawning might commence, it would be possible for the Provincial Government to place the actual date on which fishing should cease within the discretion of its local fishery overseers, subject, of course, to the dates of the general Dominion close season. A system such as this would seem to afford the most logical solution to the problem of dealing adequately with the climatic influence on the commencement of the spawning run, but obviously, to be effective, it would be necessary for the Government fishery overseers to be considerably more conscientious and more thoroughly acquainted with fishing conditions than is usual to-day, for even a few days delay would mean considerable additional profit to the fishermen at the expense of the quantity of spawn which should have been deposited.

If the Provincial Government, as it would appear, has it within its authority to thus increase the close seasons enacted by the Dominion Government, it must evidently also have the power to stop fishing altogether by the refusal to issue licenses; in fact, of producing a longer or shorter close period and similarly of closing to commercial fishing any areas it may deem advisable.

A Provincial Fisheries Policy.

In the Interim Report of this Commission and in the preceding pages of this report an outline has been given of the general condition of the great lake fisheries and of the fish trade in the Province of Ontario, and sufficient has been said to show that stringent measures are essential to eradicate the glaring evils at the root of the present situation. The past history of the fisheries has furnished ample proof of the inefficacy of attempting to bolster up an avowedly unsound system with the flaccid pills of mildly remedial legislation, so that if it is desired to save, conserve and develop the fisheries to the maximum of their worth, and to obtain the greatest possible value from them for the benefit of the citizens of Ontario, a broad general policy in regard to them must be evolved and carried through systematically, despite the protests of the monopolies and their myrmidons, and despite the denunciations and vaporings of those more interested in retaining in their hands petty political patronage than in advancing the general welfare of the community. The rapidly increasing population of the Province renders the

adoption of some such policy only the more urgent, for it is impossible to deny that year by year in the larger cities amongst a great many classes of the community the question of obtaining an abundance of wholesome and at the same time cheap food is growing ever harder of solution. Fish, which is admittedly the peer of any animal food, has never yet played its true economic role in the dietary of Ontario's population, and unless something is accomplished very soon in the direction of effecting a change in present conditions, it would appear that it would never have a chance to do so.

There can be no question that the Canadian fisheries of the great lakes are amply sufficient to-day to supply all the demands of the Canadian population adjacent to them, and, in spite of an increasing population, would be so for many years to come if the bulk of the supply was not diverted to other channels, but they cannot withstand the tremendous drain imposed on them to fill the insatiable demands of the great cities of the United States. The longer the present unsatisfactory condition is allowed to continue, the harder will it become to take the necessary measures to redress it.

In discussing the dual control in force over the Canadian fisheries but slight reference has as yet been made in regard to their international political aspect. It is plain, however, that this side of the question needs as careful consideration as any in the formulation of a broad fisheries policy. The situation which has arisen through the organization of an American monopoly to control the Canadian great lake fisheries renders it as impossible to argue that any of the more drastic corrective measures referred to in the previous sections of this report could be introduced without raising a howl of protest from the interests directly concerned, as without incurring considerable political opposition from the United States, for the deprivation of many of the larger fish markets in the United States of even a proportion of their accustomed supply of Canadian fish would be quite sufficient to ensure this latter, even though it is obvious that owing to the purely domestic nature of the measures international interference would be an unwarrantable intrusion into Provincial domestic affairs. Attention has been called to the fact that an international code of regulations has been framed for the general conduct of the great lake fisheries, and that the advantages to be derived by both nations from a fundamentally identical system of administration of the fisheries are very considerable. It has also been noted that the international code has not as yet been promulgated. How far the determination of the Provincial Government to break the power of the monopolies and to develop and exploit the Canadian fisheries of the great lakes for the benefit of the citizens of the Province would tend to further delay the promulgation of this code, or to produce modifications in it, it is impossible to determine, but at least it is evident that, as both parties to the code are greatly interested in its enactment, it would form to a certain extent a political lever in the hands of the United States

Government with which to approach the Dominion Government in any attempts to arrest the Provincial policy. The delay in promulgation has up to the present apparently been due to the efforts of representatives of certain of the fishing interests in the United States Senate, who claim that their particular localities will suffer through the restrictions imposed by the code, and in view of the fact that total or even partial prohibition of export of Ontario fish would adversely affect a very much greater number of American citizens than could the code, it is only reasonable to suppose that the hands of the present opponents of the code would be strengthened by many additional recruits, anxious to weild the sword of a prospective international code against the buckler of Ontario's domestic necessities. The Dominion Government, however, on which the brunt of international pressure must fall, has in the creation of its Commission of Conservation and in many other ways given evidence of the lively interest taken by it in all matters affecting the conservation of natural resources, and it is impossible to conceive that it could view otherwise than favourably the determination of the Provincial Government to conserve and exploit the fisheries of the great lakes on a fundamentally economic basis. Indeed, the whole question of the commercial fisheries of the great lakes is growing yearly in national and international importance to such an extent that it is doubtful whether any other course would be open to the Dominion Government than to endorse, assist, and forward a progressive Provincial fisheries policy by every means in its power, for obstruction on its part could not but be adjudged a retrogressive action by the great bulk of the Canadian people affected. The vital necessity for Ontario to secure for her present and future population the economic benefits from a magnificent commercial fishery must be apparent to every thinking citizen of Canada, and especially to its administrations, as likewise that tinkering with this great economic problem will never bring about its satisfactory elucidation. Hence it may at least safely be deemed improbable that the Dominion Government will either throw obstacles in the way, or challenge Ontario's authority to seek its solution by drastic measures, but will tender the Province its cordial co-operation to the extent of itself enacting such measures as the Provincial policy may require, and to the extent also of withstanding any international pressure that may be brought to bear to frustrate it.

In regard to the purely domestic political situation, it has already been pointed out that outside of the monopolies the only class that could be even temporarily adversely affected by the adoption of a forward and forceful fisheries policy would be the commercial net fishermen, who were either operating in certain restricted areas which it might be deemed expedient to close against commercial net fishing, or else under a prohibition of export measure were compelled to abandon their calling owing to a temporary lessening in the demand for fish. The numbers of these men are very small in comparison with the total population of the

Province, and although their distribution is such that in certain localities their influence is undoubtedly considerable, nevertheless it must be conceded that the advantages to the Province, which would accrue from the adoption of such a policy, could not fail to render it generally popular with the bulk of the population. Moreover, neither the Provincial nor Dominion Government could be materially embarrassed where both were conjointly involved in the adoption and carrying out of a scheme to rehabilitate and perpetuate the fisheries.

It would seem, then, that the field is open and the occasion on the whole propitious for the introduction by the Province of a fisheries policy adequate to the necessities of the case, and it is impossible to deny that such a step would be in the best interests of the Province. There remains, then, but to recapitulate briefly what the salient features of that policy should be.

The two outstanding evils at the root of the present situation are the absolute inadequacy of the equipment and inefficiency of the Staff of the Provincial Fisheries Service, and the commercial control of an alien corporation. It is, therefore, to these that first and most careful attention should be paid. To correct them the reorganization of the Fisheries Service and the provision of a modern and adequate equipment should be undertaken without delay on the lines indicated in the Interim Report of this Commission, and simultaneously there should be established in Toronto a central fish agency on the lines indicated in this report. Immediate action should also be taken to prevent the further export of at least the two most valuable food fishes of the great lakes, the whitefish and the great lake trout. In regard to checking the present annual decrease in the catch and subsequently to effecting an increase in it, the establishment of Provincial fish hatchery plants should be commenced forthwith, and side by side with this measure provision should be made for adequate scientific superintendence of the hatcheries and for scientific research work and statistical observations. The spawning seasons of the various fishes in each and every locality should be closely studied and provision made for the protection of the fish during those periods in the manner indicated in this report. Such areas, also, as are only inhabited by the commercial fishes when about to spawn, or by the young and immature of the commercial fishes, should be carefully ascertained and set aside against commercial fishing for at least a considerable period of years.

It is evident that the policy outlined could not be carried out in a moment, or without careful preparation and arrangement, and that not only would the expenditures involved have to be spread over a period of years, but that the whole question would require strong, consistent and yet tactful treatment throughout the period of development, such direction and impetus, in fact, as would be necessary in any walk of life for the establishment of a great and prosperous industry. As was pointed out in the Interim Report of this Commission, the method of adminis-

tration now in force is not adapted to the attainment of such an end. The abnormal expansion in all directions necessitates the undertaking of many other great public enterprises, and problems both difficult and intricate, but none the less requiring immediate solution, are constantly developing, so that it is impossible to conceive that a Minister, already so overloaded with vast responsibilities as must be a Minister in charge of so great and growing a Department as that of Public Works, should be able himself to devote either the requisite time or energy to the intricate and complex details surrounding the evolution of a fisheries policy calculated to produce a machinery equal to the task and likewise to foster and develop a demand for fish food among the citizens of the Province, who are as yet to a great extent unappreciative of its inherent economic value. Further, the delegation of such a duty to a subordinate official, even though that official were mentally and physically capable of discharging, it would inevitably result in the matter being treated as one of secondary importance, a fact which the present condition of the commercial fisheries situation would appear clearly to demonstrate, in so far at least as that where successive incumbents of a Ministerial office have had neither time nor opportunity to master even the basic principles of a problem, matters will be allowed to drift, or patchwork legislative remedies be deemed amply sufficient. Consequently it would seem apparent that the first step in the evolution of a new Provincial Fisheries Policy must be the establishment of an efficient authority to carry it out; the creation, in fact, of an executive controlling power, sufficiently stable to ensure the ultimate execution of plans laid over several years, and with sufficient time at its disposal to attend to all the intricate details on which the ultimate success of the policy must so largely depend.

The advantages to be derived through the elimination of party politics in the matter of petty appointments to the fisheries protective service were discussed in the Interim Report of this Commission, and it is evident that in the institution of such important measures as the establishment of a chain of fish hatchery plants, the provision of adequate and suitable equipment, the creation and development of a Provincial Fish Agency and the fixing of close periods and areas, the less political influence could be brought to bear on the executive chief, the greater would be the certainty of really permanent and satisfactory results being attained. The most obvious method of removing the fisheries from the sphere of party politics would be the creation of a small Commission to control them in conjunction with other matters of a somewhat kindred nature, as previously recommended by this Commission in its Interim Report, but, if such a course should be deemed inexpedient, at least some attempt should be made to place the control of Ontario's great commercial fisheries where they could receive the individual attention of the executive head which they both need and merit. The people of the Province cannot forever remain indifferent to the spoliation that is taking

place, so that it would seem to be but the part of wisdom for the Government in some measure at least to anticipate their awakening.

General Recommendations in Regard to the Great Lakes Commercial Fisheries.

In making the following recommendations your Commissioner desires explicitly to state that in his opinion the expenditure of money involved in various of the proposed measures would not be justified under the present system of administration of the fisheries, for without efficient direction and control adequate results could never be obtained.

With this proviso your Commissioner would most strongly recommend:

(1) That an executive power be created to deal with the great lake commercial fisheries and other kindred matters; if possible, by the creation of a small independent Commission after the model of the Temiskaming and Northern Ontario Railway Commission; or, failing this, by removing the control of the fisheries from the Department of Public Works and confiding it to some member of the Cabinet who is possessed of sufficient leisure to devote personal attention to the solution of its many great problems.

(2) That the reorganization of the outside service of the Department of Game and Fisheries be forthwith commenced; that only such of the fishery overseers as are capable of adequately discharging their duties shall be retained in the service; and that in future no man shall be engaged for such service whose qualifications for the position have not been definitely ascertained to be entirely satisfactory.

(3) That some form of Board be created to examine applicants for positions in the outside service of the Department of Game and Fisheries, and issue certificates of proficiency to such of them as are found to be suitable, both physically and morally, to undertake the duties they will be called upon to perform, and that without such certificate of proficiency no man shall be considered eligible for a position in the outside service of the Department of Game and Fisheries.

(4) That no official be employed in the outside service of the Department of Game and Fisheries who has any other business or occupation during such employment.

(5) That no official in the outside service of the Department of Game and Fisheries be paid less than $500 per annum, or a pro rata amount for limited periods.

(6) That steps be taken to acquire an adequate equipment for the Provincial Fisheries Protective Service on the lines indicated in the Interim Report of this Commission.

(7) That a central Provincial fish agency be established in Toronto with as little delay as possible, and branch agencies at such suitable ports as may be deemed desirable.

(8) That steps be taken to have the export of whitefish and lake trout prohibited for a term of at least five years by Dominion regulation, and that meanwhile the further export of these fishes be prevented by the endorsation of the licenses issued to fishermen and fish buyers with a provision to that effect.

(9) That the commercial net fisherman, as one condition of his license, shall be required to furnish monthly to the Department of Game and Fisheries, on a form provided by the Department for the purpose, a sworn return, showing the classes of fish and the weight of each variety caught, the number of shipments or sales made and the weight of same, and the names of the parties to whom the fish was shipped or sold, and that the signature of the local fishery overseer be required to be affixed to the return in sworn testimony of its accuracy.

(10) That fish buyers or wholesale fish merchants be put under license of $50 and retail fish merchants of $10 throughout the Province, and that, if necessary, these licenses be endorsed with the prohibition of export of whitefish and lake trout.

(11) That as a condition of license to the fish buyers and wholesale fish merchants they be required to render monthly to the Department of Game and Fisheries, on a form provided by that Department for the purpose, a sworn return of all purchases made and shipments of fish received, showing in each case the classes of fish, the weights of each variety, and the name of the consignor or vendor, together with a similar return of all bulk exports and Canadian shipments and a summary of local sales.

(12) That steps be taken to at once initiate a system of Provincial fish hatcheries, on a system which shall provide ultimately for a sufficiency of hatcheries to meet the needs of the Province in this direction.

(13) That the services of a duly qualified icthyologist be secured to report as to the suitability of sites for Provincial fish hatcheries, to superintend the construction of same and the installation of the necessary plants, and subsequently to exercise general supervision over the scientific work of the hatcheries and organize and develop a department of scientific research and statistical investigation.

(14) That a close study be made throughout the area of the commercial fisheries as to the usual dates of spawning of various fishes in the different areas.

(15) That the licenses of the commercial net fishermen in each locality be endorsed with dates which will render them invalid during the spawning of the more valuable fishes in that locality.

(16) That such areas as are only invaded by the more valuable commercial fishes during the spawning season or during other short periods in the summer months be closed altogether to commercial fishing for a term of at least five years.

(17) That such areas as are inhabited for the most part only by the

young or immature of the more valuable commercial fishes be carefully ascertained, and closed to all commercial gill or pound net fishing for a term of at least five years.

(18) That the whole fisheries be divided into a number of fishing areas for the purpose of carefully studying and determining the lengths of gill nets and the number of pound nets which can safely and advantageously be used in the same.

(19) That the value of each license be based on the value of the catch of the preceding year, the charge being fixed at the rate of $2.00 per 1,000 pounds of whitefish, herring, lake trout and pickerel, and $1.00 per 1,000 pounds of other fishes, and that the estimated value of each license be paid in advance, the balance in favor of or against the Government being adjusted at the end of the year from the sworn returns of the net fishermen attested to by the local fishery overseer.

(20) That, subsequent to the establishment of Provincial fish agencies and the introduction of a more effective system of administration of the fisheries, the experiment be made of placing the licenses in certain selected areas up to tender, power as usual being reserved to select such tenders as may be deemed the most advantageous.

Commercial Fishing in the Lesser Lakes of the Province.

The Province of Ontario is most liberally furnished with lakes of every size and description, most of them abounding, or at least once abounding, with fish of many varieties. In many of these lesser stretches of water there occur varieties of the commercial whitefish and trout, as well as the pickerel, ciscoes and other fish in more or less demand at the different fish markets of the States and Provinces, and as the decrease in the product of the great lake fisheries became marked, while the demand continued to increase, thus materially raising the market value of all classes of fish, it was but natural that the idea should be conceived of making use of the fish to be caught in the smaller bodies of water where such waters were reasonably accessible to adequate transportation facilities.

Experience in a short while proved that which was only to be expected, namely, that the smaller a body of water the less resisting power has it to the drain of vigorous commercial fishing, and, consequently, many of the inland lakes in which commercial fishing was carried on were soon absolutely depleted of all the finer forms of fish life, to the great detriment of the dwellers in the surrounding country.

There can be no doubt but that the logical economic function of the lesser lakes scattered throughout the Province is to supply wholesome fish food in the first instance to the poor settlers who open up the country and have at best a precarious existence, and subsequently as the country becomes more settled to the increasing population of the surrounding territory at cheap rates. In view of this fact it would seem

most unwise to allow even one of the many lakes to be depleted of its finer fishes, especially when it is remembered that the depletion is taking place, not for the benefit of citizens of Ontario, but chiefly for that of a neighboring nation, for, as pointed out in previous sections of this report, the great bulk of the commercial fish catch is being, and has been, shipped abroad. Moreover, in such cases where sporting fish exist in these waters, they also have suffered to a like degree as the finer commercial fish, in spite of a ban having been, in certain cases, placed on their commercial use, for it is a well known fact that all is fish which comes into the commercial fisherman's net, and a price is paid by the foreign buyer for the interior contents of barrels and boxes laden with fish as well as for the fish which adorn the tops and bottoms of such shipments. The destruction of the sporting fish in these waters is greatly to be deplored, for it deprives the region of one of its chief attractions to the sportsman tourist, whose ready cash is such a valuable asset to the country at large.

It is usually argued by those engaged, or wishing to engage, in this business that the normal increase in these lakes is, as a rule, in excess of the sustaining or feeding power of the lakes and that, consequently, the majority of fish remain undersized and thin owing to a lack of sufficient food. It is also, of course, invariably and stoutly maintained that the sporting fish can by no possible means suffer any harm through commercial fishing operations. As to the latter of these contentions, experience as noted above, has proved the exact reverse. As to the former, it cannot be denied that there may in many instances be a substratum of truth in it, and yet it must also be acknowledged that if the fish now to be found inhabiting the waters after countless years of unimpeded natural reproduction are of such small size and poor quality as alleged, it is difficult to understand how it can be worth anybody's while to undertake commercial fishing for them as a means of profit making or livelihood. The probabilities would seem to be that a limited amount of commercial fishing might indeed result in the production of larger fish, owing to the greater amount of food available for a lesser number of fish, but that, on the other hand, the extent of reduction in quantities that can safely be accomplished in the first instance is strictly limited, and that thereafter to take more than the normal increase will result in the speedy depletion of the waters of the classes of fish removed from them. It would, of course, be impossible to lay down rigidly the exact amount of fish that might be removed from any of the lesser lakes for which it might be deemed advisable to issue commercial net licenses, but, on the other hand, it is evident that if the licensees were required to make sworn returns of the catch to the Government, the accuracy of the said returns being vouched for and attested by the responsible government inspector, it would very soon become apparent when the annual catch was markedly decreasing. Having once determined that the catch had seriously diminished, it would be a simple matter to give the particular

lake a rest from commercial fishing for a period of years in order to permit of it restocking itself by natural means, as it would inevitably do if given the chance in sufficient time. That such a procedure would be the most economic method of handling these fisheries is evident, as it would eliminate all possibility of the lakes being depleted, and, at the same time, would avoid the expense of ultimately having to stock these waters by artificial means, a demand for which, in the case of those lakes which have already unfortunately been depleted, is certain eventually to arise.

Owing to the natural tendency of a licensee to derive the greatest possible benefit from the possession of his license, it is plain that the great majority of the licensees, if licenses were, on application, renewed to them yearly without question, could not be depended on to exercise impartial judgment in deciding when a rest from commercial fishing had become necessary and, consequently, the matter would have to be controlled and managed by the Government in order to attain the desired results, but it is interesting to note that in the western portion of the Province there is one inland lake fishery which has been conducted on these principles for many years by its regular licensees, with the result that in the years in which fishing is conducted the catch is good both in quantity and quality.

To ensure accuracy in returns from the licensees of inland lake fisheries, the inspection of their fisheries and shipments would have to be effective and efficient and it is, consequently, apparent that in those localities where adequate inspection cannot economically be provided at present, it would be advisable not to issue licenses for commercial fishing.

In all cases where commercial net licenses are issued for the inland lakes, the greatest care should also be taken to see that the licensees do not exceed the quantity or lengths of net called for on their license, and a study should be made of each individual case to determine what amount of net should be fixed by the Government, for especially in the case of the smaller bodies of water so much harm could be effected by excessive fishing in the short space of even one season that the fishing might remain hopelessly depleted for many seasons thereafter.

As a general rule it would seem inadvisable to issue any commercial net licenses whatsoever where there is not a clear water area of at least ten miles square, for the normal production of lesser areas must be too small to permit of profitable commercial fishing operations, except at the expense of the future supply of fish. It would seem also that in waters of even greater area than ten miles square, where sporting fish, such as the black bass, the mascalonge and trout, are to be found, it would be far better to issue no commercial licenses at all, for the value of the traffic attracted by the sporting fishes will ultimately, if it does not actually at present, far exceed the small profits to be made out of the commercial fishing of such waters, and it must, therefore, be the part of wisdom to safeguard the perpetuation of these sporting fishes. The

only condition under which licenses for commercial fishing might possibly be issued in such cases with advantage would be where a local market was sufficiently great to take the total catch of the number of licenses issued. In such instances the waters would be but fulfilling their proper functions, but the licenses issued for the purpose of supplying this local demand should be endorsed to that effect, and the inspection should be sufficiently potent to ensure this provision being enforced.

As with the great lake fisheries, so it would seem to be the case with the fisheries of the minor lakes, namely, that the value of the licenses to the licensees must vary considerably in the different bodies of water. Consequently it would appear that the system of licensing should not be as at present a fixed sum applicable equally to any lake or part of a lake, but should be an indeterminate sum to be fixed on the basis of the previous or last year's catch, and adjustable subsequently on the results of the returns of their catch sent in by the licensees; in fact, that the system of licensing should be similar to that suggested for the great lakes. It is also to be noted that the risks and difficulties attendant on commercial fishing are, as a rule, very much lightened in the case of smaller bodies of water, and that, consequently, a greater catch can be secured for a considerably less effort than in the deep waters of the great lakes. It would appear, therefore, reasonable to suppose that in many instances there should arise competition for the privilege of fishing these easy and profitable waters, and, consequently, that were the licenses put up to public tender, a considerable profit would accrue to the public. In regard to these waters, however, it must be confessed that, especially in the less settled districts, it is more advantageous to the Province to have the profits accruing from the commercial fishing of these waters go into the pockets of some needy local settler or resident than merely swell the banking account of some individual or company engaged in other matters, who undertake the enterprise purely as a speculation, have no interest in the matter other than the quick returns to be derived therefrom, and who are neither acquainted with the process of commercial fishing or with the areas over which they are allowed to fish by virtue of the license they have obtained. In all cases in this class of water trafficing in licenses should be most rigidly suppressed and the applicant or tenderer for a license should be required explicitly to state whether or not he purposes himself to undertake the actual fishing, and whether or not he is a local resident.

The same objections noted in regard to the introduction of this system to the great lake fisheries undoubtedly exist, although in a somewhat modified form. The comparative ease, for instance, with which fishing can be conducted largely discounts the necessity for the development of a distinct class of fishermen for these waters, and in the majority of cases the equipment to carry on fishing operations would neither be large nor expensive. The fact, also, that it might be necessary to close down the fisheries in the event of a material diminution in catch being

disclosed would raise a new difficulty should the tender be, as recommended in regard to the great lakes, for a term of years. Under reasonable fishing and good supervision this, however, should not frequently occur, and in the event of it doing so there would be no difficulty in arranging a proportionate rebate to the licensee, or even, perhaps, of changing the location of his license to suitable adjacent waters for the balance of the term. Moreover, where a licensee in restricted waters had conducted his business on lines best calculated to ensure a continued product from the waters and had, in all probability, some considerable capital, in proportion at least to his means, invested in nets, boats, storehouse and other equipment, not only would a distinct hardship occur should he fail to secure a renewal of his license at the expiration of its term, but it is doubtful whether it would be to the advantage of the Province to risk obtaining a less satisfactory licensee for the sake of a few dollars. This, however, might be adjusted by providing that where a licensee conscientiously fulfilled all the requirements of the law throughout the term of his license, he should be entitled to a renewal of it on the same terms on which he originally acquired it, or on payment of such additional fee as might be deemed just by the Government.

Your Commissioner would, therefore, most strongly recommend:

(1) That no licenses be issued for commercial fishing in inland lakes which have not a clear water area of at least ten miles square.

(2) That no licenses whatsoever be issued for commercial fishing in inland lakes over which rigid inspection cannot be provided.

(3) That no licenses be issued for commercial fishing in inland lakes other than the very large ones, which are the habitat of the black bass, speckled trout or maskinonge, except where a local market needs to be supplied, and then only and exclusively for the requirements of that market.

(4) That the value of a license be determined in the same way as recommended for the licenses of the great lake fisheries.

(5) That subsequent to the establishment of Provincial fish agencies and the introduction of a more effective system of administration of the fisheries, the experiment be made of placing the license issued for certain inland waters of the Province up to public tender, care, however, being taken to prevent the licenses from falling into the hands of speculators and to place them as far as possible with local residents or settlers.

(6) That all licensees be required to render monthly sworn returns of their catch on forms provided them for the purpose, and that such returns must be countersigned on oath by the responsible fishery overseer.

(7) That careful study be made of each lake in which commercial fishing is to be allowed in order to determine the extent or amount of nets which it is expedient to allow to be operated, and the periods and localities in which spawning of the commercial fishes takes place in order that these may be rigidly protected.

(8) That careful returns be compiled of the annual yield of each lake in order that as soon as a marked decrease becomes apparent in any one lake, no further licenses may be issued for it during a term of years, so as to allow of restocking by natural processes.

Lake of the Woods.

The location and peculiar configuration of the area known as Lake of the Woods have given rise to problems in connection with its fisheries which require individual investigation.

A glance at the map will show that, broadly speaking, the area is divided into two portions by the great neck of land called the Big Peninsula, the body of water to the south of it being for the most part open, while that to the north of it is merely a network of channels between innumerable islands of all sizes and descriptions. The international boundary, which runs almost north for some thirty odd miles from the point where the Rainy River enters the lake, places more than half of the open water area of the southern portion under the control of the United States, but turning then to the west leaves the northern portion entirely in Canada, while the Manitoba boundary line touches both the northern and southern portions on their western extremities. For the most part the lake, which lies, of course, in the Hudson Bay watershed, is comparatively shallow, and with the exception of a small passenger steamer plying between the towns of Rainy River and Kenora is not used for commercial transportation purposes at present, nor would it appear likely that its waters will ever serve to any great extent as a highway of commerce.

The waters themselves, however, were originally teeming with fish, of which the most valuable commercial species were the sturgeon, the whitefish, the pickerel and the lake trout, and as the country opened up great quantities of fish were removed from them on both sides of the boundary line, with the result that to-day the sturgeon has practically ceased to exist all over the lake, and the quantities of whitefish and trout have very considerably diminished, especially in the American waters, which have been fished far more strenuously than the Canadian waters of recent years. The International Fisheries Commission, indeed, have given weighty consideration to the state of the fisheries in these waters, and in the proposed international code most excellent regulations have been devised to be applicable to Lake of the Woods and Rainy River, dealing with such questions as the mesh, class and disposition of nets, classes of fish that may be fished for, methods of fishing and size limits. These regulations, however, do not altogether dispose of all the difficulties peculiar to the Ontario fishery situation.

The bulk of the commercial fishing in Canadian waters is carried on in the northern of the two zones already referred to, the headquarters of the industry being located at Kenora at the northern extremity of the lake, and the industry itself being vested in the hands of one company.

known as the Armstrong Trading Company. It is evident that in the narrow channels and waterways of this area, once the general movements of the fish have been ascertained, the operation of any commercial nets is liable to prove peculiarly deadly. On the other hand the number of licenses issued for pound nets in these waters is limited by the Department of Game and Fisheries to 14, and this fact, together with the innumerable diverse routes open to the fish as they move about on their feeding grounds, has undoubtedly tended towards the maintenance of the supply in Canadian waters. Indeed, in regard to whitefish, which are to-day the most valuable commercial fish of the lake, it must be noted that under the direction of the Armstrong Trading Company the fishermen use a mesh of net for the gill net fishing considerably greater than the minimum at present allowed by law, thus confining their catch voluntarily to the larger fish, so that, although there has, in all probability, been a marked decrease in the weight of fish caught as compared with the initial years of fishing, when the waters were practically virgin, the Northern Zone at least cannot be held to be in any danger of immediate exhaustion under the existing measure of fishing.

The town of Kenora and surrounding country do not as yet afford a market sufficiently great to consume the present commercial catch of the Canadian waters of Lake of the Woods, so that if commercial fishing is prosecuted on its present scale the fish obviously have to be shipped to other markets. To the East the markets of Port Arthur and Fort William should not, apparently, be in need of any outside shipments, seeing that they should be able to avail themselves of the fisheries of Lake Superior, so that the natural and logical market for the product of these waters would appear to be Winnipeg, and it is, in fact, to Winnipeg that the bulk of the fish is at present despatched. Whether or not Winnipeg is the ultimate market of these fish is more than questionable, the probabilities appearing to be that the major portion finds its way to the south of the international boundary line.

In view, then, of the general measures for the conservation of the commercial fisheries, and of whitefish and lake trout in particular, discussed in previous sections of this report, and especially in regard to the recommendation in favor of the prohibition of export of these two varieties, it remains to be examined what effect these measures would have on the waters under discussion.

Under the proposed international regulations the capture of sturgeon is strictly forbidden for a term of four years, so that in expectation of their speedy promulgation this fish need not further be considered.

The species of lake trout inhabiting these waters would appear from the testimony of the manager of the Armstrong Trading Company not to be of great value for export commercial purposes, as the fish, apparently, softens rapidly on ice and loses its color, thus considerably depreciating its market value. The variety of whitefish, on the other hand, is commercially second to none, and, consequently, the whitefish fisheries must be considered a valuable Provincial asset.

In dealing with the question of the prohibition of export of whitefish and lake trout, the matter was discussed from its purely international aspect, and it is evident that if such prohibition were effected by Dominion regulation and made applicable to all Canadian waters in which whitefish at least are found, there would be no need for any special precautions in regard to the whitefish of Lake of the Woods, for it would be only to the advantage of Ontario to have a market for its superfluous fish in the Provinces bounding it on either side. If, on the contrary, the measure had to be effected by the Province through the endorsation of licenses and other means already indicated, it is plain that an avenue would still be open to the foreign monopolies at the Eastern and Western extremities of the Province, for obtaining the bulk of the Ontario fish whose international export the Province was attempting to prohibit, by causing the fish to be shipped to the nearest suitable points in Canada outside the Provincial boundaries and thence transshipping them across the border, thus defeating the objects of the Provincial measure, for no Provincial legislation could be framed to embrace the destination of the fish after it had legitimately left the Provincial boundaries. It would seem, therefore, that under these circumstances special steps would have to be taken to guard against this eventuality. The establishment of Provincial fish agencies would, in all probability, tend to achieve this object satisfactorily, but as far as Lake of the Woods is concerned, the fisheries of which are so distant from the more densely populated areas of the Province and where there is only one company in operation and that a Canadian company, chiefly owned by Winnipeg interests, it would at first sight appear that the establishment of a branch agency might entail a hardship on a legitimate Canadian enterprise, for, although one of the chief purchasers of the Armstrong Trading Company is, in all probability, the American fish trust, it would seem that the concern itself is operated on Canadian capital by Canadians. Undoubtedly the surrounding territory will eventually maintain a very much greater population than at present, for both the agricultural and mineral possibilities appear to be considerable, and it is, in consequence, essential to conserve these valuable fisheries. It is also beyond dispute that the possible fish markets along both the Canadian Pacific and Canadian Northern Railways are at present entirely unexploited, so that there is a considerable field for commercial enterprise in this direction. Possibly some arrangement might be entered into with the Company in regard to the disposal of its fish with a view to securing its co-operation in fostering the market in Kenora and in the lesser towns on both railways, and also in regard to the non-export of the fish from Winnipeg. The existence of a Provincial fish agency might, indeed, render this all the easier to bring about, for the company would be able to ship to the agency, for ultimate disposal in the Province, all fish in excess of the requirements of its own markets and be assured of obtaining a fair average return. In the event, however, of the company

being unwilling to enter into any such arrangement, the most obvious means of achieving the desired end would appear to lie in the limitation of the licenses issued, so that the total catch from these waters could not be in excess of the actual present requirements of the surrounding territory, and in endorsing such licenses as were issued with a provision to the effect that the catch was to be disposed of for local consumption only, or to the nearest branch Provincial fish agency, leaving it to the superintendent of this latter institution to develop the fish markets in the Kenora and Rainy River districts.

In regard to the fact that the majority of the Canadian licenses issued for commercial fishing in Lake of the Woods are under the control of one company, it is to be noted that in view of the location of the waters the present development of the surrounding territory and the fact that it is a Canadian company, presumably catering to Canadian people, so long as the fisheries are conducted on their present scale this is probably the best method of operating these fisheries, in spite of the fact that it might be held to constitute a monopoly, for it concentrates under one Canadian control the disposal of the fish when caught and thus should simplify the enterprise of creating and developing a good local market throughout the surrounding territory, and, where necessary, the problem of bulk shipments. It would seem, however, that the Government might reasonably expect a somewhat higher revenue from these fisheries than that at present derived from the sale of licenses at fixed prices, as also that the introduction of a certain amount of competition might result in placing those who engage in the actual business of fishing in an independent, instead of practically a subordinate, position without materially affecting the position of the Armstrong Trading Company. Consequently it might be advantageous to place at least the pound nets up to public tender, the district for which the license was issued being specifically stated on the same. Should a branch Provincial fish agency be established at Port Arthur or Fort William it is plain that the competition thus created would at once become effective, although without such an institution it would, in all probability, remain nominal. As the surrounding country becomes populated, however, and the local fish markets develop, the value of these licenses should increase considerably, so that by the adoption of such a measure the Government would be placing itself in a position to take a proper advantage of such increase as it occurred.

In connection with the commercial fisheries of Lake of the Woods a problem has developed which has given rise to considerable local argument and discussion. Formerly there existed in these waters considerable quantities of pickerel and mascalonge, both of which fish are acknowledged to afford good sport to the rod angler and consequently to constitute a material attraction to visitors and sportsmen. The prosecution of commercial fishing on a considerable scale has had, however, the result already noted in the section on the lesser lakes of the Province,

namely, the rapid disappearance of both these varieties. The peculiar beauty of the northern portion of Lake of the Woods, with its innumerable woody islets, enchanting scenery and practical immunity from very high seas, renders it eminently suitable for a great summer playground, and its accessibility has already resulted in attracting to it numbers of persons from Winnipeg and vicinity, as well as a goodly proportion of Americans, to pass the summer months in this neighborhood. The citizens of Kenora have become alive to the great importance of this annual influx of visitors, many of whom have built for themselves beautiful homes on the mainland or on the islands, and, as must always be the case, leave behind them each year tribute in the shape of cash for all the necessaries and luxuries of life, and, by their very coming, create enhanced values of real estate both in the town and surrounding country. Although this traffic has already attained very considerable proportions they are bent on further exploiting its possibilities by every means within their power. Municipal enterprise is being directed towards this end in the erection of a fine modern hotel and other measures for the comfort and convenience of the visitors, and there can be little doubt that under their energetic direction each succeeding year should disclose a material increase in the numbers of persons attracted to the locality. The value of the tourist traffic is held already to have greatly surpassed the total possible value to be derived from the commercial fisheries, and it is, therefore, with considerable indignation that the rapid disappearance of the pickerel and mascalonge and the diminution in the numbers of lake trout have been observed.

It is claimed that in the vicinity of Kenora it is now practically impossible to catch a pickerel or a trout, where both used to be plentiful, and that an angler can now fish for a week over mascalonge grounds without once getting a strike where formerly a good catch was assured any and every day of the week, and that as a result of this the male section of those visitors who have built their summer homes in the locality spend yearly less time in them, and that others will not come for more than a day or two at a time. This diminution is naturally attributed to the baneful effect of commercial netting now carried on by legal and illegal means, and, as a consequence, a strong movement is on foot to abolish all commercial fishing practically throughout the northern zone—that is, over the whole of that area which affords such picturesque and attractive cruising and camping grounds to the summer visitors, and farther, to secure the erection of Provincial hatchery plants for the purpose of restocking these waters with mascalonge, pickerel and trout and introducing into them the black bass.

Undoubtedly the matter is worthy of the most serious consideration. The value of the tourist and annual summer visitor traffic has been strongly called to attention in the Interim Report of this Commission, as also the potentialities existing in sporting fish as an attraction to the same, and perhaps no better instance of this could have arisen than the case under review.

The trout in these waters is, as before mentioned, not particularly valuable as a commercial fish, but it is, nevertheless, held in local esteem as a sporting fish, especially in the spring and fall when the waters are cool. The mascalonge is not a commercial fish under present regulations, and its disappearance is to be deplored alike from its attractive qualities to the angler as from the evidence thus adduced of inefficient supervision of the fisheries. The pickerel, which is a commercial fish of considerable value, is also highly attractive to many anglers, and its presence throughout the waters of this region is, therefore, much to be desired. These fish are all indigenous to these waters and formerly abounded in them, and if the ambition of the citizens of Kenora to make Lake of the Woods the great summer gathering place for the middle west of America is to be achieved, something will have to be done to replenish and maintain the supply of all these varieties, not only in the immediate vicinity of Kenora, but also over a goodly portion, at least, of the Northern zone. To prohibit commercial fishing, however, throughout the Northern zone, as desired by many of the citizens of Kenora, would be a serious blow to the Canadian commercial fishing industry of this lake, for it would remove more than half the available area from the operations of the net fishermen, and, moreover, that area which is probably the most prolific at the present time, the most easily fished, and the nearest to the logical and actual headquarters of the commercial fishing industry of these waters at Kenora. Such a result would not appear to be at all desirable or in the best interests of the surrounding district, for the commercial fisheries, properly conducted, are an obvious and tangible asset of no small value, and with the local and adjacent fish markets fostered and developed should prove of economic and material benefit alike to the citizens of the region and to the summer visitors who might be attracted thereto.

Compromises are proverbially unsatisfactory to all parties, but in this case it would seem that some middle course is unavoidable if the greatest value to the Province is to be extracted from the possession of this uniquely beautiful, attractive and, at the same time, commercially productive area of water and countless islands.

The key to the situation would appear to lie in control. At the present time there is an overseer at Kenora burdened with a vast district extending from the Manitoba boundary to Port Arthur, and including the commercial and angling fisheries of Lake of the Woods, who, be it noted, is not even provided with a boat of his own wherewith to inspect the fishermen at work or supervise the collection of non-resident angler's tax, but has to depend on what craft he may be able to hire for the purpose of the occasional tours of inspection which the care of so great a district alone enables him to undertake. Obviously during the fishing season there is ample work for at least one man patrolling the lake to see that the licensed nets are properly set, that no illegal nets are being used, and that poachers from across the line are not fishing in

Ontario waters through the southern portion of the lake; and to ensure also that campers and canoeing parties are conforming generally to the regulations and laws of the Province and of the Dominion. To enable this work to be properly performed adequate equipment would plainly have to be provided. In addition to this no commercial shipment of fish should leave Kenora or vicinity without rigid inspection, which would entail the presence of an inspector practically continuously in Kenora, and it would appear that this official should also be charged with the collection of the non-resident anglers tax and the enforcement of the angling laws in the vicinity of Kenora, for which duties he would have to be furnished with a suitable launch. Having once provided for the adequate patrolment and protection of the fisheries generally, other measures could be then introduced for the protection of the sporting fishes as deemed necessary, with the certainty of their being carried into actual effect.

It would appear advisable, as already stated earlier in this section, to indicate clearly on each commercial license issued the exact area for which it was valid. By this means an effective protection could be afforded to the mascalonge grounds and localities particularly adapted for pickerel or lake trout trolling, as such could be excluded from commercial fishing by the provisions of the license. An area within a given radius of Kenora could be closed altogether to commercial fishing, and an adequate hatchery plant could be installed within the closed district to ensure the maintenance of the supply of the sporting fish therein, and further, if it were deemed necessary, commercial fishing for the pickerel, trout or any other variety of fish might be stopped for a term of years.

If such measures were put into active effect there can be little doubt but that they would meet the needs of the situation as felt by those interested in the development and exploitation of a great tourist traffic, while at the same time they would not bear too hardly on the established commercial fishery interests. It is evident, however, that as the value of the tourist traffic will be eventually, if it is not actually at present, immeasurably greater to the Province and to the vicinity than the direct and indirect revenue to be derived from the commercial fisheries, if an adequate staff, properly equipped to enforce these measures, is not provided, by which means alone such measures could be rendered effective, it would be better to sacrific the commercial fisheries to the extent of excluding them altogether from the northern zone, for although illegal netting would, in all probability, still flourish under inadequate supervision, at least the legitimate nets would be eliminated, and with an inspector even occasionally at Kenora open shipments should become impossible.

In regard to the question of the introduction of black bass into these waters, if it were possible to achieve it, it would undoubtedly add greatly to the attractiveness of the district from the point of view of the visiting sportsmen tourists. An experiment in this direction was made some

years ago, through the enterprise of local citizens, who caused a small and isolated lake in the vicinity of Kenora to be stocked with some small-mouthed black bass. The results of the plantation have been most satisfactory, and the waters of this little lake are to-day said to be teeming with bass. This, however, unfortunately constitutes no proof that the waters of the Lake of the Woods are suitable for bass life, and, indeed, it is questionable if such will prove to be the case. Except in a few cases near the height of land the black bass does not seem to be indigenous to the waters of the Hudson Bay watershed, although its occurrence in some of the main waterways near the height of land has obviously afforded it opportunity to spread over the whole of this water system. Consequently before undertaking plantations of fry or parent fish, or the institution of bass breeding ponds, it would be advisable to have a careful scientific investigation made of the waters and food supply in them, to ascertain if the introduction of this sporting fish into these waters is feasible. Even were it deemed impossible in regard to the waters of Lake of the Woods, the successful experiment above noted would seem to point to the fact that many of the numerous smaller lakes of the district could be advantageously made use of for this purpose, but even in regard to these it would be wiser to conduct scientific investigations before incurring the expense of further experimental plantations.

Recommendations.

Your Commissioner would, therefore, recommend:

(1) That the warden staff of the Lake of the Woods district be increased by at least two men during the fishing season, and that two launches of the class C type, as recommended in the Interim Report of this Commission, be provided for these waters.

(2) That the provisions recommended in regard to commercial net and other licenses in connection with the great lake fisheries be applied also to those issued for Lake of the Woods.

(3) That the co-operation of the Armstrong Trading Company be invited in the matter of developing an active fish market in Kenora and throughout the Rainy River District, and that if possible some arrangement be come to with that company in regard to the export of whitefish and lake trout.

(4) That commercial fishing for pickerel in this district be prohibited for a term of three years.

(5) That within a radius of fifteen miles of the town of Kenora no commercial fishing whatever be permitted.

(6) That areas of water which are or have been the favorite habitat of the mascalonge be carefully ascertained, and closed altogether to net fishing of every description.

(7) That in connection with the system of fish hatcheries, already recommended in this report, a fish hatchery plant be installed in this region to handle whitefish, trout, pickerel and mascalonge.

(8) That steps be taken to ascertain scientifically whether or not the waters of Lake of the Woods and surrounding lakes are adapted to the maintenance of black bass life, and in the event of this being found to be the case, for the establishment of a series of bass breeding ponds in the district.

(9) That the commercial net licenses issued for Lake of the Woods be endorsed with a clear statement of the district for which they are valid, and that subsequent to the establishment of Provincial fish agencies and the introduction of a more effective system of administration of the fisheries, as recommended in the above and other sections of this Report, the experiment be made of placing at least the pound net licenses up to public tender.

LAKE NIPIGON.

At the present time very little is known as to the possibilities of the commercial fisheries in this beautiful sheet of water. Some years ago a company was formed for the purpose of exploiting these fisheries, but, although the necessary licenses were obtained, no great efforts were made to take advantage of them, owing chiefly to the difficulties of transportation which at that time precluded the possibility of getting the fish to the markets excepting during the winter months, and, in consequence, after a short season of apathetic operation and indifferent financial success, the company relinquished its undertaking. Since then no further experiments have been made in the direction of testing these fisheries. From these restricted operations, however, taken in conjunction with the experience and observations of local inhabitants and Indians, there is sufficient evidence to warrant the assumption that the lake contains goodly quantities of the better classes of the commercial fishes, such as the lake trout, whitefish, sturgeon and pickerel.

At the present time a light steam railway, running in connection with a steamboat service on the lower reaches of the Nipigon River, connects South Bay on the lake with Nipigon Station on the Canadian Pacific Railway on Lake Superior. A mile or so to the north of the lake the roadbed of the Grand Trunk Pacific Railway is already in process of construction, and a deviation has been built to Ombabika Bay on the lake, while the proposed route of the Canadian Northern Railway will bring it within touch of the lake's eastern shores. It would seem, therefore, that the time is fast approaching, if, indeed, it has not actually arrived, when serious efforts will be made to exploit the commercial fisheries of Lake Nipigon, and it remains, then, to be examined how far it would be advisable to encourage such an enterprise.

The lake itself lies within the boundaries of the Nipigon Forest Reserve and drains into Lake Superior through the channels of one of the most beautiful and extraordinary rivers in the world, the River Nipigon. This river, with its cold, clear-green waters, with its wonderful pan-

orama of exquisite forest scenery, its splendid waterfalls and series of unnavigable, white-crested rapids, has long been celebrated as one of the outstanding beauty spots of the continent, and has been the Mecca of many a tourist from all parts of America and Europe, not the least of its attractions being, however, the fact that amidst all the charm of its unique and entrancing scenery sport is to be enjoyed in the shape of angling for speckled trout of such size and gameness as are to be found in but few districts of the world. Naturally the difficulties of transportation and navigation in the past, combined with the excellence of the sport on the river itself, have tended to keep the great majority of the visitors on the river, and to prevent all but the most venturesome, with considerable time at their disposal, from ascending northwards into the lake, exploring its archipelagoes and shores, and testing the angling possibilities of its waters and those of the numerous rivers and streams flowing into it. It is known, however, that speckled trout of great size abound in certain parts of the lake, and in most of the rivers which feed the lake, and it is indisputable, also, that the beauty of the scenery over a great portion of the lake and throughout the bulk of the surrounding territory is such that the construction of easy transportation thereto cannot but result in the advent of many visitors, anxious to see it for themselves and to enjoy the magnificent sport of almost virgin waters. It would seem, therefore, of the greatest importance to safeguard the perpetuation of the speckled trout in Lake Nipigon in the event of commercial fishing operations ever being permitted in its waters.

There can be no doubt but that the coming of the Grank Trunk Pacific and Canadian Northern Railways into this region will be followed by a considerable opening up of the country in the vicinity of Lake Nipigon, owing to the latent mineral, timber and agricultural potentialities of the area. To the south, the fisheries of Lake Superior should well be able to supply all the needs of an increasing population along its shores and it would appear, therefore, that the ultimate destiny of the commercial fisheries of Lake Nipigon should be to supply wholesome and cheap fish to the future population of the country to the north, east and west of it. There can be no great material benefit to the Province at large from the speedy exploitation of these fisheries, for the revenue to be derived therefrom would be but trifling and, under the existing system of administration and condition of the commercial fisheries situation, as disclosed in previous sections of this report, there would be considerable danger of these comparatively shallow waters being rapidly depleted should they be given over to the greedy operations of the monopolies or their mymirdons. On the other hand, there should be a material benefit to the Province to be derived from these fisheries in the future in supplying a cheap fish food to a growing population in the surrounding region.

It has been claimed that the lake is at present overstocked with fish and that as a result there is a paucity of food which is reflected in the

size and quality of the fish, and in consequence that commercial fishing would be advantageous to the fisheries. It would seem, however, that it will be ample time to test the correctness of this theory when there shall have been established in the region a Canadian population sufficiently large to consume the fish produced by these waters. At the present time it would appear that all the fish that is required by residents along the shores of the lake can easily be obtained by trolling and angling. No impediment, however, should be placed in the way of local residents taking advantage of the fish products of the lake, so that if the numbers of persons locating in any of the existing settlements or surrounding territory should warrant it, some form of license might well be issued as occasion demanded to supply their wants. Licenses have, indeed, already been issued for the benefit of the construction gangs along the line of the Grand Trunk Pacific Railway, and the extension of this system of practically domestic licenses would seem admirably adapted to the gradual exploitation of these fisheries as, in due course, settlement occurs. It would appear, however, inadvisable to issue very many such licenses without making provision for the inspection of the fish, as on no account should the netting of speckled trout be tolerated.

Your Commissioner would, therefore, recommend:

(1) That no commercial net fishing be allowed in Lake Nipigon for the present.

(2) That as occasion arises a modified license be issued to meet purely local needs, but that in general the domestic license, strictly for family purposes, be the only license issued for these waters.

(3) That steps be taken to ascertain scientifically what classes of fish inhabit these waters, as also their main feeding grounds and spawning beds, in order that accurate knowledge may be available to guide the subsequent development of these fisheries.

(4) That special care be taken to issue no domestic or other license for areas which are the habitual feeding or spawning grounds of the speckled trout.

THE DOMESTIC LICENSE.

This license, for a very limited amount of net, is issued for the purpose of enabling residents along the banks of rivers or on the shores of lakes to catch sufficient fish for the needs of their families, the understanding being that the catch is solely for home consumption and not for trade purposes at all. Undoubtedly local inhabitants should be enabled to take advantage of the products of the waters in their vicinity. The ordinary methods of angling are, of course, open to them, but there are classes of fish, most excellent for food purposes, which cannot be caught by hook and line, as also certain seasons of the year when all the male members, at least, of a family are busily employed throughout the day on the farm or in other directions. It was to meet these conditions that

the domestic license was devised. It is to be noted, however, that local residents have no more right to the fish in waters near to their homes than has any other citizen of the Province, for the fish belong to the community, so that the dispensation accorded them in the form of a domestic license is a privilege which should not be abused to the detriment of the general population. Unfortunately, however, it would seem that this fact is often unappreciated by the holders of these licenses, and that the license is abused in certain localities, both in the capture of sporting fishes and in trading, or peddling the catch in the surrounding district.

The value of the sporting fish in the rivers and lakes is so great to the Province that to kill them off by persistent netting is nothing short of an economic crime. If the residents of any locality desire to catch these particular classes of fish, the legal means are open to them as to other citizens of the Province under the limitations imposed by law. It is evident, however, that the placing of nets in localities which are largely inhabited by sporting fishes cannot but result in the capture of some of them, even though the intent of the owner of the net might be only to catch other varieties. Where domestic licenses are deemed to be necessary in such localities, it is difficult to determine a means of remedying this evil, but one solution, at least, is to be found in the education of the residents in these country districts to the value of the sporting fishes to themselves as a means of attracting to their vicinity the sportsman-tourist who must inevitably enrich them to the extent of the money he is bound to spend in the district. Once the residents fully appreciated the economic benefits of a regular summer tourist traffic, care would assuredly be taken by them to place their nets in such places where the least possible harm would be done to the sporting fish. In any case, if deliberate netting of sporting fish can be proved against the holders of a domestic license, the punishment should plainly be severe.

In regard to the trading of fish caught under this license, even though they are not sporting fish, it may be argued that citizens living at some little distance from the waters should be equally entitled to share in their products as those who live on the shores or banks. This, however, while correct in theory, does not affect the scope of the license under discussion, which is issued for domestic purposes only, but does not debar the licensees from giving away any surplus fish to their neighbors in the vicinity, but, on the contrary, the fact that in certain localities there may be a demand for fish, which as a matter of fact is already the case in several country districts, is merely an indication that there will arise a market for fish throughout the whole Province, if the matter is properly taken in hand, which should and could be satisfied by legitimate means.

The main evil of the domestic license lies in the impossibility of supervision, for however energetic an overseer may be, he could not personally view the catch at each lifting of the domestic nets, nor even keep close tabs on what is being caught, and thus, not only might sporting

fish be steadily destroyed, but the small and immature of other varieties might be taken in quantities and the mature fish in considerable numbers at seasons of spawning when they run into the shoals, thus tending to the rapid depletion of the waters, for the sake of a comparatively trifling gain to one or two individuals, or owing to the negligence or wilful disregard of the laws on the part of certain licensees.

The cases where there is an actual need for fish food to maintain existence are, fortunately, comparatively rare, and though, as before noted, there are seasons of the year when it may be impossible for the average farmer or his family to devote sufficient time to catch enough fish to live upon, such seasons are not, as a rule, prolonged, and there is, therefore, in the average case no apparent reason why any dispensation whatever should be granted the farmer over the average citizen, but most especially so where even the limited amount of net accorded by the domestic licenses can result in serious injury to the sporting fish. It must be remembered, also, that even in the case of those fish, such as the herring, which can only be caught by means of nets, such fish constitute no small portion of the food of such sporting fish as, for instance, the lake trout, and consequently the sporting fisheries may easily be injured by ruthlessly destroying them. It would seem, therefore, that the greatest care should be taken in the issuance of domestic licenses; that as far as possible they should be restricted to localities where the necessity for them as a means of procuring sustenance actually exists, and that it would be advisable not to issue such licenses at all for small bodies of water in which sporting fish exist.

Where there is a demand for fish inland from waters for which domestic licenses are issued, and the waters themselves are of sufficient size to warrant commercial fishing, plainly this demand should be satisfied by a modified commercial license, issued for local needs only, but where the waters are too restricted to allow of commercial fishing by the importation of fish from other sources, but under no circumstance should the domestic license, even in a small way, be allowed to usurp the functions of a commercial license. To the fact that in some districts it has done so may be largely attributed the rapid decrease of all classes of fish in these waters, so that it is evident that measures should at once be taken, where this has occurred, to prevent any further damage being wrought. The local overseers are, of course, the officials in whose hands the enforcement of the laws in this regard rest, and the necessity for loyal, active and energetic officers, unbiassed by considerations of personal friendship or party politics, is all too obvious. Each net should be visited by them as frequently as possible, and lifted in order to ascertain the nature and extent of the catch, and whether the licensee is himself lifting the net sufficiently often to ensure there being no waste, and under no circumstances should the nets ever be allowed to be placed on or near the spawning beds during the periods of spawning of any class of fish fit for food. Reports, also, of illegalities in regard to trading

should be promptly investigated, and when the charge is found to be correct, the penalty should not alone be confined to the cancellation of the license of the offending party, but should be supported by a fine sufficiently large to impress on the minds of all holders of these licenses the inadvisability of infringing their provisions even in the least degree.

Your Commissioner would, therefore, recommend:

(1) That a pamphlet be drawn up setting forth the economic value of the sporting fishes to the community, and that the same be issued with each domestic license, together with a separate printed extract from the fishing laws and regulations in regard to the capture of sporting fishes, and a clearly worded notice as to the prohibition of trading from the licenses.

(2) That any infringement of the trading provision be punished unconditionally by the cancellation of the license of the offender, and the imposition of a fine of not less than $50 or more than $100, and that the offender or any member of his family resident with him be ineligible for such a license for a period of five years.

(3) That the setting of greater lengths of net than provided for by the license be taken as evidence of trading, and that no further proof be necessary for the infliction of the full penalities for trading as above recommended.

(4) That the penalty for the deliberate netting of sporting fish be $20 for the first offence, $50 for the second, and for the third offence cancellation of the license together with a fine of $100, and that in this latter case neither the offender, nor any member of his family resident with him, be entitled to a license for a period of five years.

(5) That no nets under this license be allowed to be placed on or near the spawning beds of any class of fish fit for food during the season when such fish are engaged in spawning.

(6) That the issuance of domestic licenses be as far as possible restricted to localities in which fish food may be considered a necessity of existence, and that, except in such instances, no domestic license be issued for rivers, or for lakes with a clear water area of less than five miles square.

(7) That where a local demand for fish is sufficiently large and the extent of water warrants it, a modified commercial license for 100 to 500 yards of net be issued for such waters, but that no such license be issued where adequate supervision cannot be exercised, and that no trading in the fish caught under the license be permitted outside of the immediate locality.

WINTER FISHING.

Under the provisions of the proposed international fishery regulations netting under the ice in international waters is prohibited, together with the use of spears, grappling hooks or naked hooks, torches, flam-

Winter Fishing Shack, Sarnia Bay.

Some of the Winter Fishing Shacks on Hamilton Bay.

beaux or other artificial lights, and it would appear most desirable that these restrictions should be extended to the inland waters of the Province. When a hole is broken in the ice fish are readily attracted to the light thus let into the water, and in consequence fishing carried on under these conditions is liable to prove particularly deadly, for as the effect is apparently the same on all classes of fish, it is impossible for the fishermen to regulate the varieties of fish that his net or hooks will secure for him, or to distinguish the species should he be using the spear. Moreover, when the spear is being used, a considerable number of fish will inevitably escape with a more or less serious wound, and it is safe to assume that there must ensue a considerable waste wherever this method of fishing is adopted. As has been pointed out in a previous section of this report, the more restricted the area of a body of water the more easy is it to accomplish its depletion of fish, and since it is evident that fish are particularly defenceless against these methods of winter fishing almost as much, indeed, as against nets when they are congregating on their spawning beds, it follows that it must be even more dangerous to countenance them in the lesser lakes or rivers of the Province than in the waters of the great lakes, especially so when these lakes or rivers are the habitat of any of the sporting fishes, for these will not fail to suffer in like proportion to the other varieties. Evidence has been secured sufficiently convincing to show that in the case of Hamilton Bay the rapid disappearance of the bass was in no small measure due to winter spearing, for which many licenses have been issued in the past, and this in spite of the fact that the bass probably does not commence to move until a few weeks prior to the breaking up of the ice. Hamilton Bay, moreover, is by no means an isolated instance. There can, of course, be no objection to any citizen of the Province breaking a small hole in the ice and angling with hook and line in order to secure for himself and family what fish may be required. In fact, such would appear to be the rational means of winter fishing throughout the bulk of the Province, and the only method that should, in general, be encouraged, or even allowed, by the Government. It might, however, occur that in certain of the remoter and unsettled portions of the Province it was essential for some settler to secure a quantity of fish. In the winter the fish are easily kept frozen, and by the use of a net it would be possible to lay in a store sufficient for the winter months with comparatively little effort and within a short space of time, thus freeing the settler from the necessity of giving further thought to this source of food supply, and enabling him, perhaps, to busy himself in profitable trapping and lumbering operations at some distance from his home. In such cases, no doubt, the issuance of a domestic license for a limited amount of net would seem desirable, but on no account should trading under the license be tolerated. Again, it might possibly occur that to some community in the wilder regions of the Province fish food in the winter months was a necessity of existence. In such cases it might be found advisable to

issue to one individual a commercial license for a sufficient amount of net to meet this local requirement, but trading from such a license outside of the immediate locality should not be permitted. In all instances, however, where either a domestic or commercial license was applied for, each case should be considered on its merits and individually investigated by a competent official, for it could under no circumstances be expedient or desirable to issue such privileges except and only where actual necessity was established.

Your Commissioner would, therefore, recommend:—

(1) That the provisions contained in the proposed international fishery regulations in regard to netting under the ice, and the use of spears, grappling hooks, naked hooks, torches, flambeaux, or other artificial lights, be made generally applicable to all the waters of the Province.

(2) That in the wilder and remoter portions of the Province an exception be made to the above recommendation in so far that where the necessity for a supply of fish as a food, either for a small community or for an individual settler, is found to exist after due investigation by a competent official of the Government, a commercial license for an amount of net sufficient to supply the purely local need may be issued in the case of the small community, and in the case of the settler, a domestic license for a limited amount of net, but that under no circumstances should trading under such domestic license be tolerated, or trading under such commercial license outside of the immediate locality for which the license was issued.

The Sturgeon.

Of all fishes to be found in the Provincial waters the sturgeon is individually by far the most valuable at the present time, chiefly owing to the extraordinary commercial value of caviar, which is made from the roe of this fish. The sturgeon formerly abounded throughout the great lakes, running frequently to an enormous size, and was found also in great quantities in Lake of the Woods and many of the lesser lakes and rivers of the Province, but the rapidly increasing demand led to such a vigorous pursuit of it that in those accessible waters of the Province which have been fished commercially its numbers have dwindled almost to vanishing point. In the proposed code of regulations for the international fisheries of the great lakes and Lake of the Woods attention is strikingly called to this fact by a provision to the effect that no sturgeon shall be fished for in any of the international waters for a period of four years from the date of promulgation of the regulations, and it would seem more than probable that once these provisions are in force it will be found desirable to extend this term in order to give the fish a reasonable chance of extensive reproduction.

The sturgeon was not always held in high esteem on this continent,

Winter Fishing for Pickerel with Bob Lines.

but on the contrary for a long time was viewed as a nuisance by the fishermen on account of the damage it would do their nets and because, also, white people were prejudiced against its use for food. More often than not the fish, when taken, were knocked on the head and thrown back into the water, or left in heaps on the beach to rot or to be carried off by the farmers and used as fertilizer, while during this period, if the fish could be sold at all, they would not bring the fishermen more than ten cents apiece. In striking contrast to this figure is the record of a sale of 96 sturgeon in 1899 for $3,923, or a little over $40 apiece. About 1860 the first efforts were made in the great lake region in the direction of smoking the flesh of the sturgeon, and between that date and 1880 the trade in the fish developed in a marvellous fashion, owing to the demand for the smoked flesh and for the bladders, which were manufactured into isinglass, but chiefly on account of the great European demand for caviar, reaching in 1880 for the continent a total of nearly 12,000,000 pounds of sturgeon products. The following figures show the approximate condition of the trade in sturgeon products of the great lakes from that year onwards:—

Sturgeon Products of the Great Lake Fisheries.

Year.	Pounds.	Value.
1880	7,557,383	unknown
1890	4,289,759	$148,360
1899	1,176,818	111,389
1903	638,898	53,017

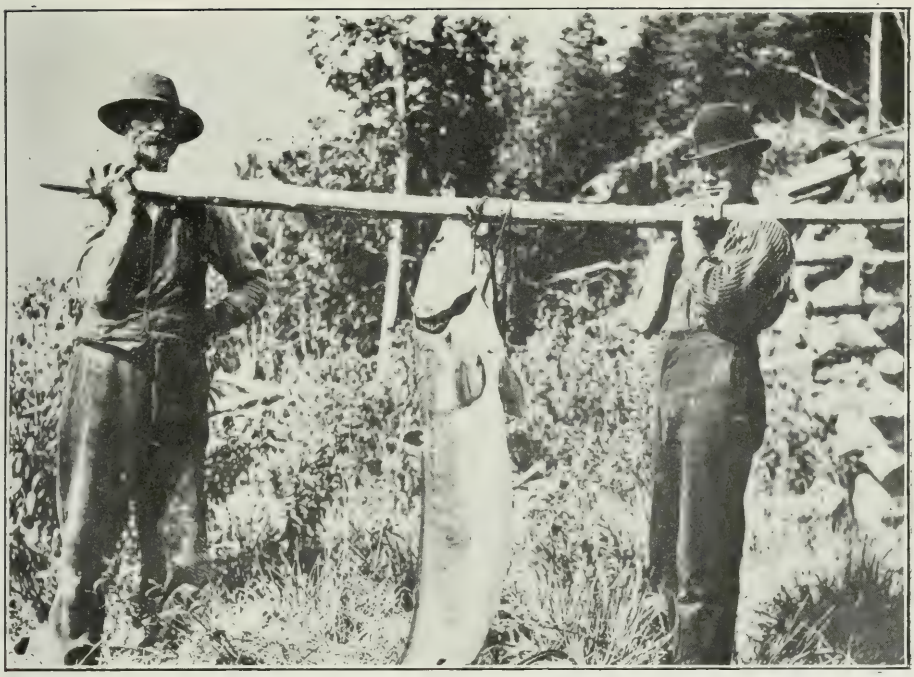
It may be noted also that Lake St. Clair, which in 1880 produced in the neighborhood of 500,000 pounds, of recent years has furnished never more than 10,000 pounds, while the catch of Lake Erie has fallen to about one sixtieth of its former proportions. That the demand for caviar was mainly responsible for the increased value of the sturgeon is clearly established by an examination of the comparative price of that material at the various periods. In 1885 caviar brought from $9 to $12 per keg of 135 pounds; in 1890 the value had increased to $20; in 1894 to $40, and by the end of that decade to $100, while since that year the price has soared considerably over $1 per pound. So great, indeed, has been the demand that in certain instances the eggs of whitefish have been made use of in an attempt to meet it.

These figures will be sufficient to show both the present-day commercial potentialities of sturgeon fisheries and the lamentable diminution that has occurred in the output in this respect of the great lakes, and to prove also that under economic management these fisheries could have been made a permanent asset of enormous value to their owners. In this connection it is interesting to note that in Russia the sturgeon fisheries are most rigourously protected and afforded a source of considerable revenue to the Government. The leases of the different locations in the Caspian Sea fisheries, which are the greatest sturgeon fisheries of that country, are auctioned off every three years, being let

to the highest bidder, who is compelled to pay in cash the exact value of the fishing plant to the former lessee vacating it. The value of the caviar production of the Caspian Sea alone is worth from ten to fifteen million dollars per annum.

According to Mr. C. W. Nash, the well-known icthyologist, there is but one species of sturgeon in the waters of the Province, although this scientific view is disregarded by the bulk of the commercial net fishermen, who have named the smaller specimens of the fish which are caught in their nets the rock sturgeon, and claim that it is a distinct variety. While, as before noted, the great lakes, Lake of the Woods and the more accessible waters of the Province generally have been largely depleted of sturgeon, there are nevertheless many localities in Ontario into which the commercial net fishermen have not yet penetrated, where the sturgeon still exists in comparative abundance, more particularly in the northern and western portions of the Province. In these areas the chief enemy of the fish would seem to be the Indian, who appears to be particularly partial to its flesh, and places his nets across the channels it must pass in its spawning movements, drying and smoking the flesh for future consumption and making use of the tough skin for diverse purposes. The value of the sturgeon is by no means likely to decrease in the future, more especially in view of the fact that the demand for caviar continues to increase and altogether to outstrip the supply, and it would seem, therefore, that some measures should be taken to safeguard such sturgeon fisheries in the Province as are still unimpaired. The difficulty of perpetuating a fish which is pursued chiefly for its roe must in any event be great, but in the case of the sturgeon this difficulty is enhanced by the facts that the fish is a bottom feeder and peculiarly easy to catch in confined water areas, and also that experience has demonstrated the great difficulty of securing ripe spawn and ripe milt at the same time, where hatchery operations are contemplated or attempted. The value of the sturgeon fisheries, however, is so great that their presence in the Province constitutes an asset which should not remain unexploited, so that it would appear that no efforts should be spared to restock waters already depleted of this fish, and that in the case of unimpaired fisheries and subsequently in that of waters in which restocking is successfully accomplished, some means should be sought whereby exploitation of the fisheries may be effected to the greatest advantage of the public without endangering the perpetuation of the fish in the Province.

Past experience has clearly demonstrated that in the hands of the ordinary commercial net fishermen, no matter in what class of water, the pursuit of the fish results in its rapid disappearance, and it would, therefore, seem advisable to debar the net fishermen, totally or in part, from profiting by the capture of this fish, for where there was little or no profit to themselves to be derived from its capture, they could at least be counted on not deliberately to pursue it. Then, in order to obtain for



A Sturgeon in the Rainy River District.

Hauling in a Six-foot Sturgeon, Lake Huron.

the public the greatest benefit from the occurrence of these fisheries in the Province, two means suggest themselves as available, namely to adopt the Russian system of subdividing the available fishery areas into locations and auction the sturgeon fishing privileges in the same at fairly frequent intervals of time, making provision for a limited open season, restrictions as to size, and for the very strict supervision of the fisheries, or else, after the Provincial Fish Agencies should have been established, to enact that all sturgeon captured under the ordinary commercial fishing licenses issued by the Province, which could not be returned uninjured to the waters, should be shipped to the nearest government fish agency at the expense of the Government, the fisherman being paid a small fixed sum for each fish thus shipped, and to operate the sturgeon fisheries by or under the immediate direction of an efficient staff of overseers, the expenses being born by the government and the products disposed of for the benefit of the public treasury. Under either system the sturgeon fisheries would thus be made to produce a considerable yearly revenue to the Province, increasing as new waters in which the fish exists are opened up under the development of transportation facilities, but the latter would have the great additional advantage that under it a sufficiency of eggs should always be obtainable for hatchery purposes, which in view of the depleted condition of the bulk of the Provincial waters is no slight consideration. Under this system, the sturgeon would become for all practical purposes a perquisite of the Crown, but it would be necessary to make allowance for the necessities of the Indians who in certain localities are largely dependent on the flesh of this fish for their supply of food. In doing so, however, it should be made a specific and punishable offence for an Indian to trade or barter with this fish outside the limits of an Indian reservation.

Your Commissioner would, therefore, recommend:

(1) That the sturgeon be declared a perquisite of the Crown, and that commercial fishing for the sturgeon be prosecuted, in such waters as may be deemed desirable, by or under the immediate direction of Government officials, the expenses being born by the Government, and the fish sold for the benefit of the public Treasury.

(2) That where under the ordinary commercial fishing license a sturgeon is inadvertently captured, and cannot be returned uninjured to the waters, it be required of the licensee to ship forthwith to the nearest government fish agency at the expense of the government.

(3) That illegal trading in sturgeon be punished by a fine of $100 for the first offence on each of the parties concerned, and for the second offence by a fine of $200 on each of the parties concerned, together with the cancellation of the licenses, if any, under which either or both parties are conducting their business.

(4) That in certain localities where the sturgeon is one of the principal foods of the Indians, the above provisions be relaxed so as to allow of the Indian taking this fish for their own use in the vicinity of their

reservations or habitations, but that under no circumstances shall Indians so privileged be allowed to trade or barter the fish outside of their reservations.

(5) That special attention be paid to restocking the Canadian waters of the great lakes and of Lake of the Woods with sturgeon.

(6) That all trading, trafficking in, or shipping of the roes of the sturgeon or whitefish, or of black caviar composed of or secured from the roes of the sturgeon or any other fishes of the Province whatsoever, be prohibited throughout the Province, excepting when such roes or caviar shall have first been secured from a duly authorized Government official and a certificate for the same issued; and that any infringement of this regulation be punishable by a fine of not less than $100 on each of the parties concerned, together with a cancellation of the license, if any, under which either or each of the parties concerned are conducting their business.

The Carp.

Some thirty years ago the German carp was imported to this continent, mainly for the purpose of stocking small ponds and lakes, its vaunted edible qualities being lauded by the press generally, and its peculiar tameness and adaptability to life in show ponds and other restricted waters arousing a veritable storm of enthusiasm for the experiment. The fish, however, fell far short of what had been expected of it in almost every respect, for not only did it fail to find favour as a food in comparison with the more delicately flavoured local varieties of fish, but also chiefly owing to ignorance of the proper methods of handling it on the part of the majority of those into whose ponds it was introduced, it appeared at first even to flourish none too well. As a result the enthusiasm for the carp very soon subsided, but little attention was paid to it even where it had been introduced, and its introduction into public waters, either by deliberate plantation or through its escape into them from the ponds in which it was confined at times of flood or freshet, created but little stir or comment. To-day there is, in the fresh waters of this continent at least, no fish against which more scathing or widely divergent indictments have been hurled.

In the thirty years which have elapsed since its importation the carp has thriven and spread in a most remarkable manner, equally astonishing, in fact, as the extraordinary increase and dispersion of the imported English sparrow, until, as in the case of the sparrow, it has become perfectly apparent that the day has passed when it could be exterminated, and that for better or worse it has come to stay.

The carp has been dubbed the hog of the waters and the simile would not appear to be inapt, for, living as it does in comparatively shallow waters and feeding chiefly on the bottom, almost anything in the shape of vegetable or animal life that will pass into its small mouth

appears good to it as food, and it will grub and burrow in the mud, digging up the vegetation in search of roots or, perhaps, various forms of animal life. It is a hardy fish, as evidenced by the varying conditions and temperatures to which it will adapt itself. Indeed, instances have been known where the fish has been frozen stiff for considerable periods and resuscitated when thawed out, while in Germany, where the fish is much appreciated and its consumption is general, it is frequently packed for the market in wet moss and under these conditions remains alive for no little time. It is recorded also that the top layers of these fish, when packed on ice and shipped by freight from Ohio to New York, are frequently found to be alive on reaching the market.

It is held by some that the carp will live to an extraordinary age, 100 to 150 years, and attain a weight of from 80 to 90 lbs., and although there appears to be little reliable evidence as to the correctness of these statements, at least it is certain that under favourable conditions the fish will live a great many years and attain a very considerable weight, specimens well over 20 lbs. having already been caught on this continent.

The carp, which commences to breed, apparently, in its third year, is remarkably prolific, as evidenced by the fact that one reliable authority has placed the average number of eggs of a 4 to 5 lb. fish at 400,000 to 500,000, while other instances are recorded of larger fish containing eggs to a number exceeding two millions. It is a school breeder, however, and particularly careless in the matter of its eggs, which are scattered over the vegetation in the shallow waters and left to take care of themselves without any further precaution on the part of the fish. To this fact may, perhaps, be attributed in part the abnormal increase in the carp in the waters of this continent, for the habitual enemies of spawn would not have been seeking for it in the open places in which it is left by this imported fish, and thus an abnormal percentage of eggs would have been successfully hatched. This, however, would in the course of time adjust itself, as sooner or later the spawn eaters will become aware of the new location of desirable food, and doubtless this will act as a check to a further proportionate increase as compared with that of the past thirty years.

In regard to Provincial waters it may, generally speaking, be said that the carp prefers the warmer waters to the colder, and, as it is a fish that habitually lives in shallow water, the great lakes, with the exception of Lake Erie, are not particularly adapted to its life. Consequently it is unlikely that it will appear in other waters of the great lakes in such quantities as in Lake Erie, although it may be expected to work its way up many of the rivers, in fact it has already done so, and, finding lakes or localities favourable to its existence, rapidly multiply therein. A well-known instance of this is furnished by Lake Simcoe, where the carp have firmly established themselves and appear to be very rapidly increasing.

The carp has been accused of many villanies, chief amongst which are that it drives the black bass from its nest, that it is a spawn eater, that it devours the young of other fishes, that by rooting in the mud it renders the water so roily that the breeding grounds of other fishes are spoiled and the fishes themselves forced to abandon the locality, and lastly, but by no means least, that it destroys the beds of wild rice and celery which in the past have been the favorite feeding grounds of the wild ducks. To this latter charge, at least, it would appear that the carp must be held guilty, although, perhaps, not quite to the extent to which it is accused, for there are well-known instances, such as certain portions of the St. Clair Flats and Lake Simcoe, where since the appearance of this fish in numbers the wild rice and celery beds have rapidly disappeared. The rooting habits of the fish, previously referred to, would account for this, especially as it is particularly fond of weedy and marshy places such as are afforded by beds of these descriptions. The other charges, however, are not so easily established. The male black bass on its nest is no despicable warrior, and it is more than doubtful whether the sluggish and cowardly carp would not prefer to retreat than to give battle to such an antagonist. Possibly schools of this fish passing over the district in which the black bass were nesting might dislodge the guardians of the nests, but there is no authentic proof of this as yet, while specific instances have, on the other hand, been adduced of an improvement in the bass fishing coincident with the arrival of the carp. Doubtless if the male bass were absent for any reason from the nest, the carp would eat the spawn if it chanced that way, as it would other spawn that it might come across in the course of its painstaking search for food, for, as before stated, to the carp all food is desirable which will pass into its mouth, but the carp has yet to be proved guilty of being a regular and persistent spawn seeker and eater, investigations of the stomachs of many of them having failed to establish any such proclivities. The feeding methods of the carp cannot fail to render the water roily, and it is, therefore, well possible that when the carp takes possession of more or less restricted areas of water, such a clean water loving fish as the black bass will depart, but other deep water sporting fishes, such as the pickerel and lake trout, would not be affected, nor does it seem probable that the spawning beds of those fishes which seek the sandy or rocky reefs could be materially injured by the carp. As to the charge of voraciousness in regard to the young of other fishes, the small, sucker-like mouth and general sluggish disposition of the carp are against the supposition that it can be a persistent hunter of swimming fishes, although undoubtedly it would gladly devour any small fishes that it could easily secure, so that its depredations under this head are assuredly insignificant. On the other hand it has been established that young carp are very acceptable food to the black bass and other sporting and predaceous fishes.

The main objections to the carp would thus appear to be that it

renders waters roily and destroys much aquatic vegetation suitable as food for ducks, and that in so doing it may be disturbing aquatic conditions generally to a degree sufficient to materially affect the existence of other forms of fish and animal life.

In favour of the carp the most salient feature is undoubtedly its commercial value. Already a considerable market for it has been developed in the larger American cities, the average price to the fishermen being from 1½ to 2½ cents per pound, and the chief consumers, Germans and Jews. Trade in this fish from the waters of Lake Erie has already reached no small proportions. Special seine licenses are issued for its capture, the carp being such an active and wary fish that it can but rarely be caught in gill or pound nets, and by means of these seines many tons are now annually removed averaging from 5 to 8 lbs. in weight. It is plain, therefore, that the carp will afford a cheap food, not only to the Germans and to the Jews, whose fore-parents better understood how to prepare the fish for the table, but also to the poorer classes of the community in this Province as the population increases. Moreover, a red caviar, much esteemed by the Jews, can be manufactured from the roe of carp, and since no means as yet has been discovered of rendering this caviar the blue-black colour of sturgeon caviar, it is always easily recognisable, so that there could be no objection to the development of this enterprise. The palate, sometimes called tongue, is in some portions of the world considered also a great delicacy. Further, if no other use could be found for carp, at least a profitable industry could be founded by turning them into valuable fish fertilizer.

Two other points in favour of the carp have been claimed by its champions, namely that it is a powerful factor in the destruction of the fluke worm, so injurious to cattle and sheep, supposedly consuming the parasite which causes the disease while in its systic state, attached to the leaves of grass, or while in its intermediate host, the common fresh water snail Limnaea, and also that it will consume the larvæ of noxious insects, notably those of the mosquito. Moreover, the carp may, to some degree, in rivers below cities do important service as a scavenger, destroying the germs of certain human diseases.

It will be seen, therefore, that there is something to be said for the carp as well as against it, and as it has come to stay, it will obviously be best to seek the greatest possible profit from it. The majority of the citizens of the Province claim that the carp is not palatable, owing to its muddy flavour, but this would appear to be due largely to faulty methods of preparation. The Germans have many various ways of preparing the fish into most excellent dishes. Dr. S. P. Bartlett, a champion of the carp, makes the following suggestions on this score:—

"Kill as soon as caught by bleeding, taking out all the blood. Skin, soak in salt water for several hours, then parboil and bake, basting frequently."

Some dressing is also suggested. In any case it would appear that popular dislike of carp as a food is in part, at least, due to prejudice,

for there are instances on record of this fish having been served in hotels and restaurants under other designations, such as bluefish, without apparently being detected by the majority of the guests, while on one occasion, under the title of Red Snapper, it was served at a dinner of a well-known American Fish and Game Club and was acknowledged to be a most palatable dish. Moreover, Germans will frequently select this fish by choice in preference to the finer American varieties, while, as already noted, the Jews are particularly partial to it. Experiments have been made in smoking the flesh of the larger fish and preparing them after the manner of sturgeon meat, and in this form it is claimed that they are also exceedingly palatable.

Finally, as sport for anglers, the carp can, it would seem, lay some claims to distinction, although it is doubtful whether such will be admitted in this Province to any large extent so long as the black bass, the speckled and lake trouts and other sporting fishes are to be found in abundance. In Germany carp fishing is a popular sport and the Father of Fishing, the redoubtable Isaac Walton, devotes a whole chapter to this fish. That in certain localities of this continent its merits in this respect are already winning recognition, the following extracts from remarks by Dr. S. P. Bartlett, of Illinois, will sufficiently prove:—

"The carp when hooked is a vigorous fighter and care must be taken that he does not break the hook, or break out the hook from his mouth. I would advise the use of a landing net. I have found the best bait to be a dough ball, made by boiling cornmeal to a good stiff mush and then working the ordinary cotten batten into it until it becomes hard and stiff, rolling it into little round pellets about the size of a marble. Fried potatoes, sliced raw and fried until they become stiff, not brittle, is also a good bait. I have seen as many as 200 people fishing along the shores and nearly all of them get fair strings. One day, within a distance of three miles on the Illinois River, I counted 1,103 people fishing with hook and line, and on investigation it developed that a large per cent. of them were taking carp. The majority of those caught weighed a pound, and as heavy as five pounds, all of them probably used as food."

Dr. Bartlett also quoted from the letter of a prominent sportsman of the State, Mr. D. M. Hurley, of Peoria, Ill.

"Carp fishing with hook and line has now taken its place with bass and other kinds of fishing. All along the river in this locality carp are being caught freely with hook and line this year, and to say that they are gamey is not half expressing it. I have talked with no less than 25 persons who were busy catching carp and in every instance I was told that it was rare sport to hook a carp, as it was quite as much a trick to land one as it was to land a bass. Dip nets were used generally to land the carp, as the activity of the fish when jerked out of the water would tear the gills and free the fish quite often. The bait used when fishing for carp is dough balls and partly boiled potatoes, the latter being the best in the opinion of the majority. The carp will bite on worms also

quite freely. An old German, who lives here, goes daily to the rivers with a regular fly-casting pole and reel to fish for carp. Of course he exchanges the fly for the regulation hook, but he uses his reel in landing the carp and says that there is no finer sport than fishing for carp. As for the sport of catching carp with hook and line I consider it equal to anything in the way of pleasure fishing, as the fish is gamey and will fight as hard against being landed as bass or other game fish, and is to be handled with precaution on account of the tender gills, which will often tear when hooked by an inexperienced angler. In the past two years carp have become popular where they were unpopular, because of the wearing away of the prejudice that they were of no benefit to the angler on account of the belief that they would not take the hook. Now it is different, as the very ones who were so loud in their protest against the carp have found great sport in taking them with the hook and line, and it is wonderful to hear the change of sentiment as to the carp for food purposes. They are a good fish now and fit for a king in comparison to what was said of them while the prejudice still existed. To my mind the carp is a good fish for food purposes and is fast finding favour in the West in every way, now that the angler has found that it is the coming fish for sport."

Thus it will be seen that even on this continent the carp has its champions as a sporting fish, and that already many are profiting through the pleasure of its pursuit. It must also be remembered that the class of angling which alone will satisfy the fastidious and expert angler is not demanded in general by the masses, who as a rule are entirely content so be their efforts are rewarded by a little sport and the capture of some edible fish.

In conclusion, then, it would seem that where the carp is found to be working damage, steps could advantageously be taken to reduce its numbers to a minimum, although in allowing seining for this fish the greatest possible precautions should be taken to prevent the destruction of other, and especially the sporting, varieties of fish, but that, in view of the fact that it is impossible now to exclude the fish from much of the Provincial waters, it would be the part of wisdom to educate the people in some measure to its edible, sporting and other qualities. Your Commissioner would, therefore, recommend:—

(1) That the present policy of issuing seining licenses for the capture of carp only, in districts where this fish is found to be abundant and working harm, be continued provided that proper government supervision can be and is arranged for, but that if possible this work be undertaken in inland waters by officers of the government.

(2) That a pamphlet be drawn up for circulation among the citizens of the Province with a view to educating them to such advantages as are possessed by the carp, especially as a food and sporting fish.

THE PROPOSED INTERNATIONAL FISHERY REGULATIONS.

The proposed code of international regulations for the protection and preservation of the food fishes in international boundary waters of the United States and Canada deals comprehensively with many questions in connection with the commercial fisheries of the Province, and the presumption that the day cannot now be far distant when this code will be promulgated has deterred your Commissioner from entering upon a discussion of them in this report. There has, however, already been a considerable delay in the promulgation of these regulations and it cannot be denied that the same causes which have operated to this end in the past may conceivably continue to do so in the immediate future. There is an urgent necessity at the present time for a revision of the regulations in regard to such matters as the construction and location of pound nets, the mesh of nets, the amount of netting, the prohibition of netting in certain localities, the closing of the sturgeon fisheries in the great lakes and the prohibition in these waters of netting under the ice and the use of naked hooks and spears, flambeaux, torches and other artificial lights, besides various other matters disposed of by the proposed regulations. It would, therefore, seem advisable to take steps to ascertain from the Dominion Government the probability of the near promulgation of the international regulations and in the event of no satisfactory assurances being received that promulgation will shortly take place, to attempt to introduce or to have introduced measures affecting these questions on the lines indicated in the proposed international regulations. By so doing the situation would in no way be complicated, but on the contrary prepared and simplified for the introduction at a subsequent date of international regulations which have seemed wisest to the joint Commissioners of the United States and Canada.

It is proverbially unwise to attempt to cross bridges before they are reached, and in consequence criticism of the proposed international regulations as a whole is not attempted in this report, but attention is called to the following point as it would appear to open the way to various misunderstandings and difficulties.

At the commencement of the regulations are set forth various definitions of terms subsequently made use of in the code, and therein the expression "Coarse Fish" is defined as "suckers and other fish of little value as food for man." In the body of the regulations as affecting the fisheries of the great lakes are various clauses prohibiting the placing of nets in certain localities such as St. Mary's River, St. Clair River, Detroit River, Niagara River, St. Lawrence River, where such constitute the international boundary, or in Lake Erie within one-half mile of the international boundary, and prohibiting also the use of trap nets, but a succeeding clause dealing with the fishing for coarse fish would appear to nullify much of the value of these wise provisions. The clause in question reads as follows:—

"NETS FOR COARSE FISH.

"Nothing in these regulations shall prohibit the use of the seines, fyke nets or other nets exclusively for the capture of the carp, eels and coarse fish. When fyke nets are used for such a purpose the wings and leaders shall not extend more than 10 feet from the entrance."

Consequently, in all the waters of the great lakes there would appear to be no obstruction to the use of the trap or any other class of net, so be that the intention was avowed of catching only coarse fish. Some such clause had plainly to be inserted to meet the eventuality of either country finding it necessary to remove quantities of certain classes of fish, such as the carp or pike, but the omission of the stipulation that such nets should be employed by government officials only, obviously throws this privilege open to the public. Unfortunately, the very waters in which fishing, except for coarse fish, is prohibited distinctly by the regulations, as well as much of the shallower water throughout the great lake system, in addition to supporting such varieties of fish as the pike, perch, bullhead, carp, mullet and sucker, contain also in many instances such valuable sporting fishes as the black bass, the pickerel and mascalonge, and, as has already been shown in previous sections of this report, where netting occurs in such waters, but especially trap, hoop, or pound netting, it has up to the present at least been found impossible to check the rapid decrease, in many cases, indeed, the total extinction, of these sporting varieties of fish.

The definition of coarse fish as above quoted may, of course, not be intended to include the catfish, mullet, perch, or pike, as it would plainly be a valid contention that such fish have an appreciable value as food for man, both from the point of view of physical and material economy, but on the other hand, those interested in securing such licenses would have apparently an almost equally powerful argument in comparing either the food or economic value of these fishes to that of the whitefish, the herring, the lake trout, or the pickerel. That sportsmen in many localities would most assuredly protest against any such netting being allowed, is certain, and seeing that the definition of coarse fish, as enunciated in the proposed international regulations, is so vague, the whole matter might easily give rise to intricate and prolonged legal proceedings to determine its exact interpretation according to law. The issuance of the licenses, however, would of course rest with the Province, so that, although under the provisions and definitions of the proposed international regulations, should these come into force, there would appear to be the possibility of considerable divergence of opinion and friction, the means of avoiding it would still remain in the hands of those in charge of the administration of the Provincial fisheries.

How far in such large water areas as those of the great lakes, or in the narrow channels of the international rivers, it is to the benefit of the commercial and sporting fisheries to remove such fish as the pike,

the carp, suckers, eels, bullheads, is a most difficult matter to determine, for each undoubtedly has its function to perform in the general scheme of nature. Occasionally a situation will arise, such as those of the abundance of carp in Lake Erie and of suckers in the Georgian Bay region, where it would plainly be advisable to take measures to decrease the quantities of these fish, and doubtless, also, where other more valuable fishes are being removed from the waters, it is expedient also to remove a proportionate amount of less valuable varieties. In all cases, however, but especially in rivers, channels, bays and restricted or shallow water areas generally, the granting of ordinary commercial licenses for this purpose cannot but be accompanied by grave danger to other classes of fish, and particularly so when very strict and efficient supervision cannot be guaranteed. Indeed, it would appear to be more than probable that the harm done by such means very frequently would be immeasurably in excess of any benefits derived from the removal of predaceous or coarse fishes.

Thus, unless the strictest supervision could be ensured, it would appear on the whole to be inexpedient to issue ordinary commercial licenses for the taking of coarse fish only in rivers, channels, bays, restricted and shallow waters generally, especially so in those known to be the haunts of valuable sporting fishes, but rather, where the removal of such fishes has become desirable, to undertake the work with Provincial officials, as has already been done in regard to the ling and other too abundant predaceous and coarse fishes in the waters of the Rideau Lake system.

Your Commissioner would, therefore, recommend:—

(1) That steps be taken to ascertain, if possible, from the Dominion Government the probable date of promulgation of the international fishery regulations.

(2) That in the event of the promulgation of these regulations being indefinitely postponed, efforts be made to secure the introduction of measures in regard to the construction and location of pound nets, the mesh of nets, the amount of netting, the prohibition of netting in certain localities, the closing of the sturgeon fisheries in the great lakes and Lake of the Woods, and the prohibition in these waters of netting under the ice and the use of naked hooks, grappling hooks and spears, torches, flambeaux or other artificial lights, on the lines indicated in the proposed international fishery regulations.

(3) That in the event of licenses being issued for the capture of coarse fish only, the specific fish that may be caught be mentioned clearly on the license.

(4) That in rivers, bays, channels, shallow and restricted waters, the general policy be adopted of undertaking the removal of undesirable fish when necessary, as a Provincial enterprise, but where this is not feasible, that licenses for this purpose be only issued where absolutely strict supervision can be assured, and that in such cases any infringe-

Mid-day on the Lower Steel River, Thunder Bay District.

ment of the license in the matter of the deliberate destruction or sale of sporting fishes be punished by a fine of not less than $100 on each of the parties concerned, together with the cancellation of the licenses, if any, under which the business of either is being conducted, and that the offenders be debarred from securing any commercial fish license whatsoever for a period of five years.

THE SPORTING FISHERIES.

The Economic Function of the Sporting Fisheries.

The truth of the old saying, "All work and no play makes Jack a dull boy," has long been recognized by those connected with or interested in the moral, physical and educational development of the child and youth, and under the advance of modern civilization greater efforts are continually being put forth to ensure for all young people throughout the early years of their business careers an abundance of wholesome diversions. Moreover, in view of the fact that fresh air is one of the prime necessities of a healthy body, especial attention is paid to sports, games and other means of inducing them to spend a considerable portion of their leisure hours out in the open. The importance, however, of drawing the older citizens, most of whose time is spent in the office or factory, out into the country or on to the waters of the lakes and rivers, where they also may breathe for a space pure and invigorating air, is more generally overlooked, and yet it is more than doubtful whether from the point of view of the well-being and prosperity of the nation this is not an equally important problem. Much of the physical deterioration prevailing in the more congested areas of great cities, and the vices and evils existing in cities and towns alike, are to be attributed in great part to lack of sufficient inducement to the people to seek health and wholesome exercise elsewhere than on the streets, and it must, therefore, be apparent that where an attraction does exist which is capable of drawing thousands daily, or at least weekly, out into the open air and providing them with both exercise and amusement, it must be morally and economically advantageous to foster and develop that attraction by every possible means. The potentialities of angling rank high in this regard. The sport is suitable to both sexes and to all ages, from the young child to the old man and woman. It is within the means of the poor as of the wealthy, for the most expensive equipment is but little guarantee of greater success than that which will be attained with the humblest tools, as is well evidenced by the fact that in 1909 the largest recorded small-mouthed black bass of the year caught in Provincial waters was captured by an eleven-year-old child by means of an ordinary pole with a hook and line attached thereto, while also it must be

remembered that with the masses, at least, the extent of the catch will always remain the most important factor.

The Province of Ontario is particularly fortunate in the possession of innumerable rivers, streams and lakes, many of which in the present, and practically all of which in the past, abounded in fish of many varieties, a goodly proportion of which were amenable to the allurements of the baited hook. Consequently if properly appreciated and administered the sporting fisheries of Ontario should play a role in the creation of moral and physical prosperity, growing in importance yearly as cities and towns continue to develop and the population to increase.

That the ordinary working man will only too gladly avail himself of the opportunity of angling is evidenced by the numbers who either singly or with their families engage in this pastime in those localities where even moderately good fishing is to be had, but, as the majority of human beings are prone to be somewhat impatient of negative results to their efforts, that number very rapidly decreases in proportion as the fishing deteriorates. It would seem, then, of particular importance to maintain the sporting fisheries in the neighborhood of cities and towns to the highest possible level of abundance, and the larger the city the greater will be the importance of so doing, owing to the proportionate difficulty that is coincident with the growth of cities of providing suitable open-air distractions and amusements for the masses. Hook and line fishing within reasonable limits, and especially in the case of large water areas, will never impair the fisheries to the degree that is effected by means of even a limited amount of nets in the waters, and it would seem, therefore, that no matter where situated, it is extremely inadvisable to permit any commercial net fishing whatsoever in the immediate vicinity of cities and towns where any fishes to be caught by hook and line are at present to be found, or have previously been known to exist. The total commercial fishing area of the Province is so great that those engaged in the commercial fishing industry could not claim that any injustice was being done them by prohibiting the use of nets in such waters, and if the policy were adopted of barring all commercial fishing whatsoever within at least a five mile radius of cities and towns, even to the extent of prohibiting commercial hook and line angling, not only would the fishing interests on the whole be unaffected, but a wise and proper provision would be thereby made for the wholesome and healthy recreation of their inhabitants to-day, and for the needs in this direction of an infinitely greater population in the future. It is plain also that such a measure would greatly simplify the maintenance of the supply of sporting fishes in these areas by artificial means, where such was found to be necessary.

In addition to supplying an incentive for healthy outdoor amusement to the citizens of the Province, the sporting fisheries fill another role of probably equal economic importance, referred to at length in the Interim Report of this Commission, in that they afford a most potent

F. C. Armstrong's Home Camp, for Tourists Visiting the Steel River, on Clear Water Lake, Near Jackfish.

attraction to the sportsman-tourist from other Provinces and countries to visit and pass some time in the Province. An annual influx of visitors is bound to bring immediate pecuniary benefit, for they must pay for the necessities of life, and in addition can confidently be expected to spend money in other directions than those of plain living expenses. Perhaps no better illustration of this could be adduced than the importance attached locally to the annual exhibition held in this city. It is impossible, in fact, to conceive of the outcry there would be amongst the merchants of Toronto were it proposed to abandon this feature, and yet, while equally great or even greater benefit to the Province at large is to be derived from the angler tourist who passes a week or more in some remote village, or even in the wilds, in pursuit of his favorite pastime as from the visitor to Toronto's Exhibition, this fact has not at yet come to be generally, or in many instances even locally, recognized. Consequently lakes, rivers and other waters in which sporting fish formerly existed in abundance and whither there journeyed yearly a proportion of ardent anglers both from Provincial towns and also from abroad, have in many instances not only been depleted of their sporting fish, but the local residents have themselves been the chief means of effecting this depletion through illegal or excessive netting, or disregard of the fishery regulations, remaining the while oblivious to the material harm they were working to their district and to the Province through the reckless destruction of the valuable sporting fishes. Naturally enough the visiting angler-tourist requires good sport for the money he expends to secure it, and if he cannot obtain it in one locality he will inevitably move to another. In most of the States and Provinces of the central and northern portions of this continent angling of some description is to be had, so that it is evident that unless the sporting attractions of Ontario's fisheries are maintained to a higher level than the average, the Province cannot hope to attract an increasing number of annual visitors bent on angling, but rather that the number will steadily decrease. The accessibility of Ontario and the excellence of her sporting fisheries in the past have already built up for her no inconsiderable angler-tourist traffic, but so many of her water areas have already become more or less depleted that the complaints of visitors are to be heard on all sides, and had she not possessed such a vast number of waters to draw on doubtless a diminution in the yearly traffic would already have occurred. In any case every dissatisfied visitor is a misfortune to the Province, and if the percentage of waters, depleted or comparatively depleted of sporting fishes, continues to increase as it has in the past few years the effect on the angler-tourist traffic cannot but be most serious. It is to be noted also that the waters which have suffered the most in this respect are, in many instances, those most accessible; the very waters, in fact, which, if well stocked with game fish, should be drawing to them yearly the greater number of visitors from outside, and the fact that this is the case must militate against the popularity of the Province as a general tourist re-

sort, for many who would be willing to undertake a short journey either alone or with their families for the sake of securing good sport during the summer vacation would be deterred from coming in proportion as the distance to be traversed and the difficulties of access become increased. Plainly, therefore, it is of the utmost importance from the viewpoint of encouraging the angler-tourist traffic that the sporting fisheries in the more accessible waters of the Province should be rendered as prolific as it is possible to make them, and especially so in cases such as the Muskoka district, where the natural beauty of the scenery and formation of the region generally render it eminently suitable for the purposes of a great summer playground, while, were it not for this factor, the locality would be comparatively useless and unprofitable to the Province.

From the returns of the $2.00 non-resident angler's tax it is certain that at least 20,000 anglers visited the Province from outside during the past season, but it is acknowledged that as yet the collection of this tax has by no means been perfected, and consequently the actual numbers of tourists who angled in Provincial waters was assuredly very much greater than this figure. Unfortunately no means other than the non-resident angler's tax of ascertaining the number of summer visitors from outside the Province are available, but it is obvious that a great proportion of those who purchased the licenses would have been accompanied by their families or friends, some of whom did not care to do so, which again would very materially swell the total count. That each of these persons was directly responsible for some cash being left in the Province is evident, for board and lodging, for transportation, recreation of all descriptions, and perhaps for luxuries, as likewise that the total amount thus accruing to the Province must have been a very considerable sum. Its exact proportions could, of course, never accurately be determined, but if some method of approximating the number of annual visitors attracted by the angling and scenery could be devised, it would at least form a basis on which an estimate could be formed, and thus constitute a direct education to the citizens of the Province at large as to the immense value to themselves of the sporting fisheries which, in all probability, are directly or indirectly responsible for at least 50 per cent. of the summer tourist traffic. A rough approximation of the number could at least be arrived at by requesting the keepers of hotels and boarding houses to furnish returns of all visitors from inside and outside the Province, other than those whose stay was in connection with business only, and in the country districts, at least, the overseers might well be utilized to check such returns or even themselves to compile them.

The number of points along the great extent of the boundaries of the Province which afford easy ingress to visitors from the east and west and south naturally result in a considerable dispersion of the visiting tourists, and as the country opens up and transportation facilities increase the range of the summer visitors will inevitably expand, especially so if, as is to be hoped, their numbers considerably augment. The importance,

therefore, of maintaining the sporting fisheries generally throughout the Province to a high level of excellence is apparent, as likewise of safeguarding even those waters which are at present practically beyond the reach of even the most adventurous tourist. The greater the dispersion of the visitors the greater will be the benefit to the Province at large, for it is precisely in the more sparsely-settled regions that their cash will be productive of the most immediate good, seeing that it is the poor settler or farmer, with whom ready money is almost invariably scarce, who will first secure it and benefit by it as it passes on its way into the ordinary channels of trade in the Province.

The summer visitor, however, is not merely advantageous to the Province from the ready cash which he leaves behind him. In Ontario there are abundant opportunities for the investment of capital, and there is no better method of attracting capital to a locality than giving ocular proof of its potentialities to those who possess or control it. Men may read at a distance of great chances and great developments, and remain apathetic or unimpressed, but if those great chances or developments come under their own immediate notice they will, as a rule, commence to take a lively interest in them. In addition to the capital launched into the Province for the purchase of real estate or timber limits, many an instance could be adduced to-day of a thriving industry or concern in this Province which owed its initiation to the fortuitous chance of a summer visit, and in the majority of cases the prime cause of the visit would be found and acknowledged to be the quest of some variety of sport. Each successful investment, as also each satisfactory enlightenment of a responsible business man from abroad as to the favorable conditions for the investment of capital in the Province cannot but act as an advertisement for Ontario and result, in some measure at least, in turning the eyes of those with capital to invest towards her. It is evident, therefore, that nothing that will in any way assist in bringing into the Province the more wealthy class of visitors and sportsmen-tourists should be ignored, especially not such a prime factor in this regard as the sporting fishes.

There are, of course, in the Province certain localities, such as the Rideau Lake System, the Kiawartha Lakes and Muskoka district, where the value of the tourist traffic is recognized, and where also the sporting fishes are accorded at least a measure of their true worth as a factor in the attraction of tourists, but it is, perhaps, in the extreme west of the Province that the beneficial attributes of the sportsman-tourist and the attractive power of the sporting fishes are most appreciated and understood. At Kenora, with all the advantages of its location on the shores of beautiful Lake of the Woods, already a great summer tourist traffic has been developed by the energy of its citizens. At Port Arthur and Fort William, the rivers flowing into Lake Superior, notably the noble Nipigon River, have played no small part in attracting tourists to the district, eager to land the sporting speckled trout. But at Kenora, as at

Port Arthur and Fort William, the citizens believe in the future of their cities; they believe, also, in the timber, mineral, agricultural and other potentialities of their districts; and they realize not only that to expand their cities and exploit these inherent advantages it is necessary to attract capital, but that one of the surest means of inducing the more wealthy classes to visit the districts is to offer them prospects of really good angling. At Kenora, as before noted in this report, a strong movement is on foot to bar all commercial fishing in Lake of the Woods and other waters within a radius of 50 miles of the town, and to stock these waters with black bass and other sporting fishes, while at Fort William and Port Arthur the keenest interest is evinced in the question of restocking the rivers and lakes of the surrounding country which have unfortunately become depleted.

It would seem, therefore, that in the Province to-day a realization of the economic role of the sporting fishes in regard to the development of a tourist traffic has not only taken root, but commenced to spread its shoots, and that it would require but steady effort in the direction of popular education over a comparatively short period of years to effect a general recognition of its vast importance. For the Government to undertake such education would plainly be advantageous to the whole Province.

The Sporting Fishes.

Angling as a sport or pastime has for many generations claimed thousands as its devotees throughout the world, and many and various are the classes of fish which are enshrined in the beautiful literature to which this subject has given birth, in almost every tongue of the civilized world. The pleasure of being out in the open air; the natural beauty and fascination of the scenery or the peacefulness and solitude of the surroundings, and, in some cases, the hardships and difficulties to be encountered, together with the skill required for success, the excitement of the struggle and the joy of victory, have all contributed their quota to the popularity of this sport, and it is not too much to say that there is no land in the world where it is more generally appreciated than on this continent.

There are those who, armed with delicate and expensive equipment, have brought their skill to the point of a veritable art, and will only pursue such fishes as will give them a prolonged and vigorous struggle under conditions which will afford their art full play. Those there are, again, who prefer to have their angling under the easiest possible conditions, and still others who, whether their tackle be inexpensive or costly, care rather for the amount of the catch than for the skill required to effect it, setting more store on some measure, at least, of success than on either the gameness or variety of the fishes captured. Strictly speaking, in so far at least as this continent is concerned, it is doubtful

whether the title of "sporting" would be accorded to any fish by the majority of expert anglers which was not alike possessed of good fighting and edible qualities, but the expert anglers are in a great minority as compared with the masses who often or occasionally indulge in angling, and it must, therefore, be conceded that under the term sporting fishes there might well be included all such fish as afford sport to a fair proportion of the population, the more so as even amongst the expert rod anglers themselves there are to be found cases of considerable divergence of opinion. The yellow pike or pickerel, for instance, has only recently come to be looked upon as a sporting fish in this Province, and even so only in certain localities, whereas in the United States it has long been accorded high rank; while, again, trolling the deeper waters for lake trout with powerful rod and heavy copper line, is by some despised, but by many regarded as a most delightful and exhilarating sport.

The sporting fisheries of the Province should, therefore, not be considered as confined only to those classes of fish whose game and edible qualities have resulted in their universal classification as "sporting," but should be viewed as embracing other classes of fish whose pursuit affords recreation and sport to thousands. Thus under this heading there must be included, besides the bass, the speckled trout, the mascalonge, lake trout and pickerel, such coarser varieties as the pike, perch and rock bass, and perhaps even the more despised bullheads, carp and mullet, for while the term "sporting fish" in regard to them may, in its strictest sense, be a misnomer, their pursuit and capture, while despised and neglected by the expert rod angler, is none the less esteemed a most excellent sport either by the young or by the masses.

For many of the coarser fish there is, of course, a steady demand on the fish markets of the greater cities as a cheap food, and again both lake trout and pickerel, while undoubtedly in a sense sporting fishes of considerable importance, are none the less commercial fishes of the highest rank, and as such of great economic worth to the Province both as a food and as a commercial commodity. The commercial use of the black bass, mascalonge and speckled trout is forbidden by law, but it would plainly be inexpedient and impossible to prohibit the commercial exploitation of all those fishes embraced by the widest definition of the term "sporting" throughout the waters of the great lake system. There are, however, localities, both in the great lakes and in other portions of the Province, where the economic value of such fishes as a means of providing sport is already far in excess of the actual commercial value, such, for instance, as the vicinity of cities and towns, and those regions most particularly adapted for the entertainment of a large number of summer visitors. This latter fact was well emphasized by the Dominion Royal Commission of the Georgian Bay Fisheries, which included among its recommendations the setting aside of a very considerable area in that region to be treated as an exclusive sporting fish preserve. There can

be no doubt but that it would be to the advantage of the Province were all such waters to be similarly treated.

In previous sections of this report dealing with the commercial fisheries various recommendations have been made which have also a direct bearing on the sporting fisheries, notably as to the prevention of commercial fishing in rivers and lakes with less than a clear water area of ten miles square, the limitation of domestic licenses, the prohibition of spearing or netting in the winter, and the removal of predaceous or coarse fishes from those areas in which commercial fishing is deemed inadvisable by Government officials, or at least under direct governmental supervision, so that it is needless again to discuss these matters under the present heading. There is, however, one other question closely allied with these problems which remains to be examined, namely, the fishing for lake trout and pickerel in those inland waters for which commercial licenses are, or will be in the future, issued. Both varieties of fish are, as a rule, to be found in such waters and naturally constitute no inconsiderable portion of the catch of the commercial net fishermen, while, in addition, the commercial value of their flesh is high. Consequently, were the net fishermen to be debarred from fishing for or selling these fish it would appear that it might materially affect the possibility of their making a success of the enterprise. On the other hand, as already pointed out, the great lake commercial fisheries should be amply sufficient to supply the general market of the Province and the function of these lesser water areas, stocked with commercial fishes and of sufficient size to render commercial fishing permissible, is undoubtedly to fill the needs of a purely local market, and should be confined to this purpose. If this latter fact should come to be recognized and adopted as a general policy, as recommended in this report, it is evident that only a local resident would engage in the business of commercially fishing such waters, or, in fact, that the business would, as a rule, be undertaken by some individual as a means of augmenting an income derived from other sources. The hardship to the fishermen, therefore, in prohibiting the commercial fishing of lake trout or pickerel in confined water areas would be very appreciably diminished under such conditions. The value of both these fishes is undoubtedly great as an attraction to tourists, and in addition to this, if the fishing for either or both varieties was good, even though there might be a possible local market sufficient to consume all that might reasonably be caught under a commercial license, the residents of the surrounding district could be counted on to take full advantage of the excellence of the fishing in their vicinity, and thus the distribution of the fish as food through the neighborhood would be almost equally well effected as could be accomplished through commercial trading. It would appear, then, that in the lesser inland waters throughout the Province it would, on the whole, be advantageous to prevent, as far as possible, the commercial exploitation of either the lake trout or pickerel. The supervision of fish shipments, which are the pro-

ducts of small lake commercial fisheries, should be easily effected so that even though general trading in the fishes could not be prohibited in the Province so long as they remain legal commercial fishes when caught in the great lakes, at least what lake trout and pickerel where netted in such instances would have to be disposed of locally, and it should be comparatively easy, therefore, to bring home the offence to the offender. The endorsation of the commercial licenses issued for the lesser lakes in which it was desired to stop commercial lake trout and pickerel fishing, with the prohibition of netting or selling either fish under the license, would appear to meet the requirements of the case, provided a reasonable penalty was imposed for any infraction of the provision. Such a step would, of course, be within the jurisdiction of the Provincial Government. It is apparent that the value of the commercial license would by this means be somewhat diminished, for the trout and pickerel command an especially high price, but, on the other hand, there can be no urgent reason advanced for the commercial exploitation of the fisheries of the lesser lakes under the ordinary commercial license, at least not at the present time, so that, even if the measure did result in the sale of a less number of such licenses, there would be no occasion for great regret on that score.

THE DISTRIBUTION AND CHIEF CHARACTERISTICS OF THE RECOGNIZED GAME FISHES OF THE PROVINCE.

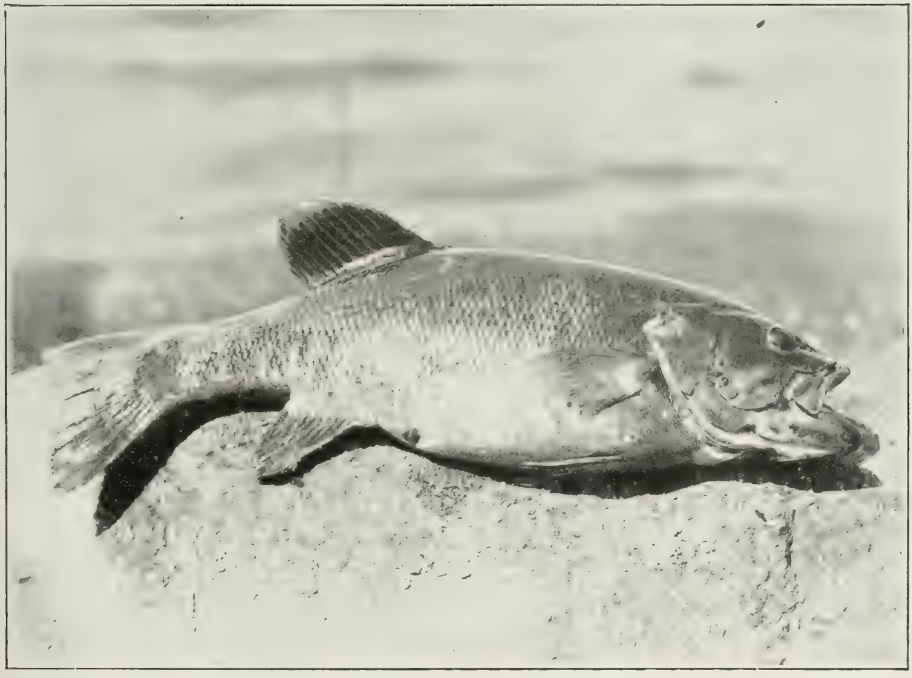
The Small-Mouthed Black Bass.

It is generally acknowledged that at the present time the black bass is the most important of all the sporting fishes to be found in the Province. Its fighting qualities are second to none; as a table fish it is the peer of any, and consequently it is not only most highly esteemed by the anglers of the Province, but affords also an immense attraction to those who live without the Provincial borders. The range of the black bass is considerable, and it is found in more or less abundance throughout most of the waters of the eastern and central portions of the Province, as well as in certain portions of all the great lakes, with the exception of Lake Superior. To the north it does not appear to any great extent in the waters of the Hudson Bay watershed, excepting, perhaps, near the height of land, while to the west it does not occur much beyond the eastern limits of the Algoma district with the exception of a few rivers and lakes in the Rainy River district, which, although themselves a part of the Hudson Bay watershed, are close to the height of land in Wisconsin territory, south of which this fish again appears in abundance. Although the range of the black bass is thus seen to be very extensive, it does not occur naturally in all the waters of the area indicated. The Algonquin National Park, for instance, in which lie a network of lakes, and where

also are the headwaters of several important rivers in the lower reaches of which the black bass does occur, possessed no fish of this description until the experiment was made of introducing them. It is to be noted also that, generally speaking, to the north of the latitude of Georgian Bay, even where the fish does occur, it is, as a rule, not in such great abundance as in the more southern waters, and it is evident, therefore, that those waters, such as the Bay of Quinte, the Ducks near Kingston, the Rideau Lakes and Kiawartha Lakes, which have become famous in angling circles as particularly prolific in black bass, even though of recent years their reputation may have waned owing to the depletion which has occurred, should be most highly esteemed, cared for and preserved by the Province, for it is a practical certainty that no such magnificent fishing grounds for black bass in Ontario remain to be discovered in the future.

In general the black bass seems to prefer cool, clear waters, having a rocky or gravelly bottom. It is a voracious and cannibalistic fish, its food consisting chiefly of insects, crustaceans and small fish, but when it is hungry it will, apparently, consume almost anything which it can overpower. At the approach of winter it ceases to feed and lies dormant under logs, weeds or rocks, until shortly before the ice commences to move, when, as the warmth of the water increases, it rapidly regains both its energy and appetite. The spawning season commences in May and is over early in July, the actual date of commencement appearing largely to depend on the temperature of the water. The male fish prepares a nest by scooping out a shallow hole in sand or gravel, and when this has been accomplished to his satisfaction he proceeds in search of a mate. At this period the males are most pugnacious and desperate encounters frequently take place between them. Having found a mate and successfully conducted her to his nest, the male fish has to court the female in order to induce her to void her eggs, which he does by rubbing himself gently against her sides. When the spawning process is complete, the female fish departs and the male mounts guard over the nest. Incubation lasts approximately from seven to fifteen days, but the male fish does not leave his charge until the small fishes are able to swim and thus more or less look after themselves, and while engaged in this duty he will attack and drive away anything which approaches the nest. Consequently it is of the utmost importance that the fish should be protected at this period, for he will rush at almost any lure for the purpose of chasing it away, deeming it a dangerous intruder, and thus lends himself to easy capture. In such cases the destruction is not limited to the parent fish alone, but will almost inevitably result in that of the progeny also, for in the neighborhood of the nests there are invariably a host of enemies of spawn and very young fry, such as chub, minnows and other creatures, which alone are kept at a distance by the presence of the guardian over the nest.

The bass will on occasions take the fly, more frequently so in some



Black Bass.

localities than in others. It can also be captured still fishing or trolling with a variety of baits, such as the angle-worm, trolling spoon, frog and natural or artificial minnow. It is, however, not always an easy matter to induce it to bite, especially so where food is plentiful. Frequently it will approach the bait, sometimes taking it into its mouth and playing with, without swallowing, it. On the other hand, there are times when the fish bite greedily and without hesitation at almost any bait that may be offered, and on such occasions it is possible on good bass grounds to land considerable numbers of the fish. In any case, once the bass is hooked, it rushes away at great speed and commences to fight most vigorously. In the course of the struggle it will, as a rule, break water two or three times, and the battle can never be considered as won until the fish has actually been landed, for up to the very last moment it will resist capture with all the strength and energy it possesses. In fact it is not too much to claim for the small-mouthed black bass that there is no fish in the world which weight for weight will fight with more persistent determination, and it is incontestable that it must be accorded premier rank among the game fishes of the Province, alike for the sport which it provides throughout the wide area of its distribution to the citizens, and for the attractive power which it possesses, to draw enthusiastic anglers to Ontario from all parts. In weight the small-mouthed black bass ranges up to 6½ to 7 lbs., though fish of this size are but infrequently caught. A 2 to 4-lb. specimen, however, can be counted on to give the angler all that he requires in the way of magnificent sport.

The Large-Mouthed Black Bass.

The large-mouthed black bass, sometimes known as the yellow or green bass, is not infrequently confounded with the small-mouthed variety. Its distribution is almost coincident with that of the latter, namely, the eastern, southern and central waters of the Province, but it does not range quite so far to the north. As a rule this fish prefers those waters which have a mud bottom and in which, consequently, there is an abundance of aquatic vegetation, so that it occurs in greatest abundance in quiet lakes and bays, but it appears to be capable also of adapting itself to running waters and even to thrive therein. As in the case of its small-mouthed relative, the spawning season commences in May and is completed early in July, being determined largely by the temperature of the water, and it also constructs a nest which it scoops out of the sand or mud for the reception of the eggs. Incubation lasts from one to two weeks, varying with the temperature of the water, the young bass remaining in the nest for about a week after emerging from the eggs, and until these latter are ready to move away the parent fish remains on guard. The principal foods are fish, frogs and crustaceans, and in the summer months it is most usually to be found under overhanging banks, in the shelter of sunken stumps or logs, or in holes among the weeds. As

the weather becomes cold, the fish, as a rule, seeks deep waters and hibernates either in the mud or under sunken logs or rocks.

As a sporting fish the large-mouthed black bass ranks high, even though it is not, as a rule, quite so vigorous a fighter as the small-mouthed bass. The introduction of bait-casting as a means of angling has greatly enhanced its value in this regard, for the very places in which it is most usually to be found are those which it would be most difficult, or even impossible, to fish by ordinary still fishing or trolling methods. It cannot be denied that this class of angling is most fascinating, the skill required to cast the bait from 30 to 100 feet exactly into the desired spot over a hole in the weeds or alongside some sunken tree-stump or log being equally high as that exacted in the art of fly fishing, while the nature of the surroundings very frequently adds greatly to the difficulties of landing the fish after it has been hooked. Perhaps the best fishing grounds for this purpose in the Province occur in the drowned lands to be found along the Rideau Lake system, and it would be hard, indeed, to discover waters more admirably adapted to the requirements alike of the fish and the bait-caster.

The large-mouthed bass is, of course, to be caught by other means than bait-casting. It will at times rise freely to a fly, and in many localities, where the surroundings permit of it, still fishing with the angle-worm, frog or minnow is productive of good results, while it is also to be captured on occasions by trolling, either in those running waters in which it occurs or in the vicinity of its habitual retreat among the tree-stumps or weeds. It is a powerful fish and when hooked fights much in the same way as the small-mouthed bass, making a series of desperate rushes and occasionally, but not so frequently, breaking water, but, as before noted, it is apt to be a trifle faint-hearted and to give up the struggle more readily than would ever its small-mouthed relative. It is an excellent table fish and in this Province runs in weight up to 6 or 7 lbs., though such large fish are not often to be secured.

The Brook Trout.

In the days prior to the advent of civilization the brook, or as it is frequently styled the speckled, trout, abounded in most of the streams and rivers of the Province flowing into the great lakes and St. Lawrence River, and occurred also in the waters of many of the lesser lakes. The fish, however, which is not, strictly speaking, a brook trout, but a close relative of, if not identical with, the celebrated char of North Britain and the European continent, requires both cool, clear waters and an abundance of shade in order to thrive, and the opening up of the country has, in consequence, very considerably affected its distribution. It is a well-known fact that the removal of the forest will inevitably effect material changes in the nature of the waters of a district, and this fact is well illustrated by the streams of southern Ontario, for many of those

which formerly might have aspired to be styled rivers have fallen to the level of brooks, swept by freshets in the spring and with but a trickle of water in the summer months where formerly there was an abundant and steady flow. It is to be noted also that the temperature of the rivers and streams is raised by the removal of the forest, and especially so in such cases where no shade trees are left to line the banks. The brook trout will not thrive in warm waters, nor in waters absolutely destitute of shade, and consequently has disappeared from many waters which it formerly inhabited. Naturally enough this has occurred most noticeably in the more settled portions of the Province, for it is these which have been the most thoroughly shorn of their timber. Pollution of the waters, through the dumping of poisonous or deleterious matter therein by towns and factories, has also in certain localities played no inconsiderable part in the extinction of the fish, and a like charge, it is to be feared, must be levelled against the ruthless overfishing, both angling and netting, which has but all too frequently taken place and which, although due in part, no doubt, to the excellence of the sport afforded by the fish, cannot but chiefly be attributed to the high estimation in which it is held for table purposes and the consequent good price that can be obtained for it. The sale of the fish is prohibited by law, but unfortunately this has as yet far from checked illegal trafficing in it. In many of the Provincial cities and towns, including even Toronto, it continues to be peddled, and some even of the regular fish dealers are not entirely innocent on the score of handling it surreptitiously.

While, then, the natural range of the brook trout may be considered as including much of the eastern and southern portions of the Province, it is unfortunately the case that it has largely disappeared from this area through the causes above enumerated, although in a few of the wilder regions, where timber is still standing and civilization, generally speaking, has not as yet intruded to any great extent, it may still be found in comparative abundance. In the Algonquin National Park, for instance, many of the little lakes and streams of that wild and beautiful district are well stocked with the fish, and the same may be said of other portions of the Ottawa River basin and of more or less isolated localities to be found in Haliburton, Hastings and other counties. Those waters, also, which drain into Lake Huron and Georgian Bay may, for practical purposes, be said not to be brook trout grounds at the present time, although in the Parry Sound district and other localities there are places where good fishing is still to be secured, for it is not until the streams of the Algoma District are reached, which flow into the North Channel, that the fish commences to appear in appreciable quantities. Thence, however, westward it is to be found in most of the rivers and lakes flowing into Lake Superior, reaching its zenith of abundance and size in the Thunder Bay District. In this region are situated the Nipigon River, already world-famous for its magnificent trout fishing, and many other fine streams, such as the Steel, and it is to be noted also that the fish

is abundant in portions of Lake Nipigon and in most of the rivers and streams which flow into it. To the west of this, again, in the Rainy River District, the fish does not appear to exist at all in the waters of the Quetico Forest Reserve, the Rainy River, Lake of the Woods or surrounding territory, and in the northern and western portions of this district it is doubtful whether it occurs anywhere in very great abundance. Its distribution, in fact, in those waters of the Province which drain into James or Hudson Bay, would seem to be more or less confined to the regions north of Lake Superior, and it is, apparently, most abundant in the neighborhood of the height of land. There is, indeed, no doubt that many of the rivers and lakes of this watershed in both the Thunder Bay and Algoma districts are as well stocked with brook trout as almost any of the waters flowing into Lake Superior. It is an unfortunate fact that already many of these latter waters are beginning to show the effects of illegal netting, and if the brook trout is to be perpetuated in them steps should be taken at once to check this nefarious traffic. It is certain also that the building of the Grand Trunk Pacific and the Canadian Northern Railways will throw open a great new territory north of Lake Superior in which excellent brook trout fishing will be readily secured. In view of the importance, therefore, of this fish as an attraction to anglers, both from at home and abroad, it would seem that the greatest precautions should be taken both in the Superior basin and in the virgin territory to the north of the height of land not to repeat the mistakes made in the older portions of the Province, but to ensure that a sufficiency of forest shall be left standing to maintain the steady flow and normal temperature of the waters, and that the shade along the banks of the rivers and lakes shall be jealously preserved.

The brook trout is a voracious feeder, living chiefly on small fishes, insects and crustaceans. The size which it attains depends largely on the nature of the waters in which it lives and the food to be obtained therein. In small streams it may mature at a length of six or eight inches and a weight of only a few ounces, while in larger bodies of water, with an abundant supply of food, it will reach a length of eighteen inches or more and a weight of from 6 to 8 pounds. Large fish such as this are still to be taken in the Nipigon River and Lake Nipigon, and in that region fish of from three to five pounds are by no means uncommon.

The spawning season of the fish extends from August in the north to December in the south, the trout running up towards the headwaters of streams and depositing their ova on the gravelly shallows. The number of eggs produced by the female depends largely on the size and age of the fish, those in their second year voiding from 50 to 250 eggs, while larger fish may lay as many as 1,500. The period of hatching depends in great measure on the temperature of the water, varying from thirty-two days in warm weather to one hundred and sixty-five in cold. In the early part of the summer the trout prefers the ripples and shoaler parts of the stream, but, as the temperature rises with the approach of hot

weather, it returns to the deeper pools or the vicinity of cold springs, where it remains until the return of autumn urges it once more up stream to spawn. The close season for brook trout commences at present on September 15 and extends to April 30 of the following year, so that over the best brook trout fishing grounds of the Province, namely, in the North land, some of the fish are already ripe, or even commencing to spawn, some weeks prior to protection being afforded them. In this region, however, the latter part of August and the two first weeks of September are undoubtedly, with the possible exception of early May, the most pleasant period for angling, as the fly and mosquito, so prevalent through the summer, have by that time practically disappeared, and, moreover, this is also the time of year most convenient for vacation purposes to a great number of sportsmen. It would seem, therefore, on the whole, to be inexpedient to shorten the close season, but the fact that spawning commences so early in this region renders it all the more important to lose no time in the institution of hatchery plants in order to ensure the continued abundance of the fish.

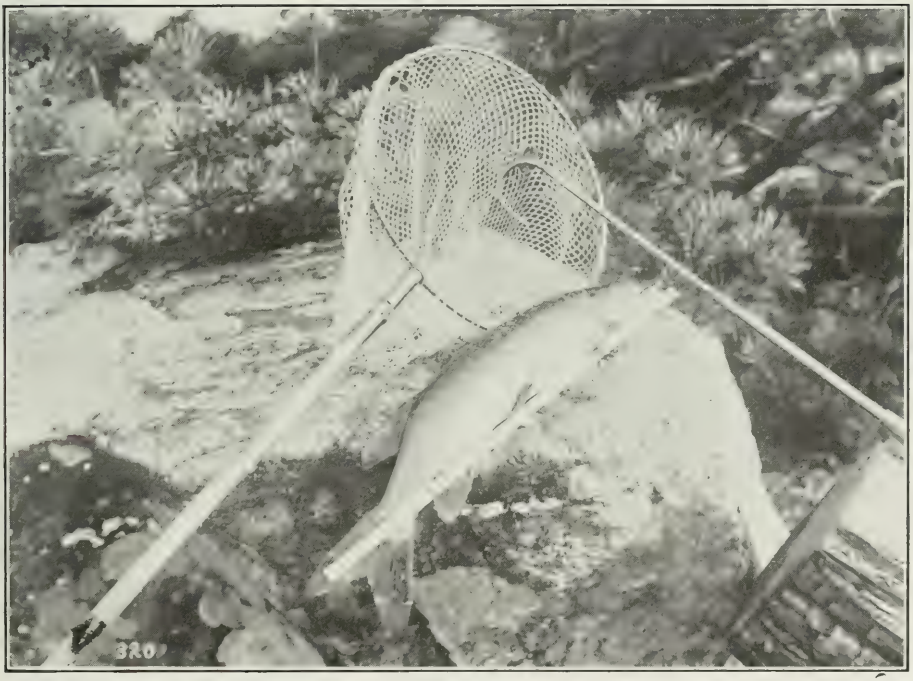
The fame of the speckled or brook trout as a sporting fish is so universally known that there is no need to insist on its merits in that respect, excepting, perhaps, to note that the brook trout of the Province is the equal in this respect of any to be found throughout the world. In the northern waters the fish will, as a rule, rise readily to the fly in the early morning, in the evening and for some hours after nightfall, but often decline to do so during the heat of the day. This, however, would not appear to apply to the almost virgin waters entering Lake Nipigon from the north, east and west, nor to those waters to the north of the height of land, where the fish appear to be so numerous and greedy that catches have been made with the fly when the day was already warm and the sun high in the heavens, doubtless owing to the fact that the very abundance of the fish entails a comparative scarcity of food. In general, however, the trout can be induced to strike at a worm, a frog or minnow at almost any period of the day, and although the historic traditions of speckled trout angling condemn such methods and place those employing them without the pale in the opinion of exclusive fly fishermen, there can be no doubt but that both the very early morning and after dark in the evening are not times of the day which appeal to the vast majority of those who indulge in this sport either in Canada or in the States, and that by far the greater number prefer to start their angling after breakfast and put up their rods at sundown. Moreover, it is only comparatively few who have the opportunity of becoming expert fly-casters, so that it would seem that much of the brook trout angling of this Province is destined to continue to be effected in total disregard of the ethics of the present day fly fisherman and of the ancient traditions woven around the pursuit of this splendid sporting fish. While this to a certain extent may seem a pity, and must inevitably act in the direction of accelerating the diminution of the supply unless

special measures for artificially maintaining it are introduced, it cannot be denied that the prime benefit to be derived from the possession of fisheries, in a land where those fisheries belong to the public, lies in affording the greatest pleasure and satisfaction to the greatest number, both of residents and visitors, so that, although it might be advisable in certain instances to set aside brook trout rivers for fly fishing only, in general it would be inadvisable to introduce any such restrictions. The paramount necessities are to prevent netting, to stamp out commercial trading in the fish and to safeguard the waterflow and shade. If these matters are attended to the fame of the brook trout fisheries of the Province, in the north land at least, will continue to grow, to the material benefit not only of the residents in the localities which furnish the sport, but of the citizens of the Province at large.

The Mascalonge.

The mascalonge, sometimes called the maskinonge, or muskellunge, longe or lunge, is the largest and most formidable member of the pike family to be found in the waters of the Province. The markings of this fish are so many and various, even in the same locality, that it is not always easily distinguished from the pike by those not well acquainted with its general appearance and general characteristics. In the young the upper half of the body is, as a rule, covered with small, round black spots, but these usually change their shape or disappear as the fish increases in size. In mature fish the spots are more diffuse, sometimes enlarging to an inch and more in diameter, or else, by coalescing, form broad vertical bands, while in others again there are no distinct dark markings at all. The majority of mascalonge in provincial waters appear either to be unmarked or to show only faint bars, the spotted form being the most uncommon.

The distribution of the longe is somewhat irregular. It occurs in the St. Lawrence River, chiefly about the Thousand Islands, in the waters of the Trent Valley, Lake Scugog, Lake Simcoe and many of the lesser inland lakes. Again in Lake Erie and the Georgian Bay it is comparatively common, the most famous district for it, perhaps, in the whole Province occurring in these latter waters, in and in the vicinity of French River. Further west it is still to be met with in certain portions of Lake of the Woods, in spite of the fact that netting would appear greatly to have reduced its numbers in those waters, and there would seem to be little doubt but that as the range of the angler extends over the country in the Lake of the Woods region, it will be found to exist in various of the waters of its lesser lakes. How far the range of the fish extends to the north has not yet been accurately determined, but it does not appear to occur north of the height of land. It is evident, however, that the very localized distribution of this fish must endanger its perpetuation unless the most stringent measures are taken to suppress illegal netting and to ensure that the bag limit is enforced.



Mascalonge.

Like all pike, the mascalonge is a voracious and cannibalistic fish, and is possessed of a very large mouth armed with teeth of considerable size which give the fish extraordinary power in holding its prey. In habits it is a solitary fish, lying concealed among aquatic plants at the sides of the channels or beneath shelving rocks in open waters, and from its place of hiding will dart forth upon any living thing which is unfortunate enough to come within its reach and small enough to become its prey. At spawning, which occurs soon after the ice goes out in the spring in the shallow waters about the reed beds, the fish pairs, the female depositing a large number of eggs which hatch out in from fifteen to thirty days according to the temperature of the water. The mascalonge has been known to attain a gigantic size, running up to 80 or 100 lbs., but it is rare to-day to hear of specimens over 50 lbs. being caught. Fish up to 40 lbs. are, however, still caught each year.

As a fighter the longe is justly celebrated and the great weight sometimes attained by the fish renders the pursuit of it all the more exciting. As a rule, the moment it is struck, it will break water and tear away in a tremendous rush, subsequently during the struggle repeating these manoeuvres time and again until it becomes exhausted. Fishing with a stout trolling rod it is rarely that specimens of greater weight than 10 lbs. can be brought to the gaff in less than 20 minutes and as the size of the fish increases so in proportion does the time required to land it, until in the case of very large fish, to weary one out taxes the strength and endurance of a strong and practised angler. So powerful are the jaws of the longe and so wicked its disposition that even in the case of the smaller fish it is usually found advisable to stun it before taking it into the boat, while in the case of larger fish, which are so strong that they will frequently tow a boat considerable distances, it is as a rule not attempted to take them into the boat, but a landing is effected at some shallow or convenient spot and the fish brought in to shore.

The method of angling for mascalonge is trolling from a boat with a spoon or other artificial bait, but the very largest fish would appear to be most readily lured with a live fish carefully attached to the hook so that it will not drown, but swim in natural fashion after the boat as it slowly moves along. Trolling is, of course, equally effective when either the rod and line or the hand line are employed. The latter, however, can hardly be considered a sporting method for so noble a game, and in view of the fact that the distribution of the mascalonge is comparatively limited, that to those sportsmen who desire a prolonged and desperate struggle it is above all fish to be found in Provincial waters the most attractive, and that consequently not only many anglers of the Province but also an equally great or greater number from abroad can be counted on to spend some time yearly in its pursuit, it would seem that angling for this fish might well be restricted to the rod and line. The mascalonge grounds are as a rule so well defined that this would be by no means difficult to arrange. Other sporting fishes are of course to be

found in the waters inhabited by the longe, and it might obviously occur that in hand trolling for such fish a longe might be hooked, but the nature of the bait used would in general preclude the hooking under such circumstances of all but the smaller specimens and so hardy is the fish that some, at least, of the fish thus hooked could be returned to the water with a fair prospect of remaining alive. If, therefore, a regulation to this effect were included in the regulation prohibiting hand trolling for mascalonge, it should result in the saving of a proportion of the fish thus caught. It might, perhaps, be argued that to prohibit hand trolling for the longe would debar a number of people from this class of fishing who would otherwise enjoy it, especially those of the weaker sex, but it must be conceded that it is essentially a man's and a sportsman's fish, and it would appear, therefore, that it might well be considered and treated as such.

The best season of the year for longe fishing is the autumn, for then the fish is hard and in prime condition and its fighting qualities at their very best. At this period of the year also its flesh is firm, flaky and of excellent flavour, whereas in the summer months it is apt to taste rather weedy.

The Lake Trout.

The lake trout, which is variously known also as the salmon trout, grey trout, togue or tuladi, is the largest representative of the coarse charrs existing in fresh waters, attaining a length of several feet and a weight up to 60 lbs. and more, though it is infrequently at the present time that fish over thirty pounds in weight are secured in this Province. The coloration is extremely variable, being sometimes grayish, sometimes pale, and sometimes almost black, but in all cases with rounded pale spots which are often tinged with red, while on the back and the top of the head there are fine vermiculations resembling those of the brook trout. This variety in colouring has given rise to the belief that there are several distinct species of this fish, but it would appear to be doubtful whether there are more than at most two scientifically distinguishable species. The local peculiarities in the markings, therefore, which are to be observed in the fish of certain lakes may perhaps be attributed to the characteristics of the particular waters.

The lake trout is to be found throughout the great lakes and in most of the larger and many of the smaller inland lakes of the Province. It is a highly predaceous and voracious fish, and will devour almost anything, its principal food consisting of herrings, young whitefish and other soft-finned fishes. In the general it frequents the deeper waters, but is to be captured in waters of almost any depth, being taken usually near the bottom. The spawning season varies greatly according to the locality, commencing in the northern waters early in October and in more southerly regions not until November. The close season for this

A Fine Spot for Pickerel near Lake La Croix, Rainy River District.

fish, however, has been fixed from November 1-30, so that in many localities the fish is afforded no protection whatsoever during the period of reproduction. Whatever may be the merits of the contention, as applied to the commercial fisheries of the great lakes, that the fish is of such a hardy and rapacious nature that it is well able to look after itself even under such conditions, this would obviously not apply in the case of smaller bodies of water where the numbers of the fish are comparatively few, and in consequence, in those lesser lakes in which the lake trout affords sport to residents or visitors some measures should at once be taken to protect the fish at the local time of spawning against both netting and angling. The fish spawns in water from 10 to 100 feet deep, the eggs being deposited on the reefs of honeycombed and similar rocks. The flesh of the lake trout is highly esteemed for food purposes, and it ranks very high amongst the table fishes of the Province.

As a sporting fish the lake trout is esteemed by many, and it is to be noted that in certain of the lakes of the eastern portions of the Province, such, for instance, as some of those in the Rideau Lake system, Haliburton and adjacent counties, it is claimed that the local variety excels in fighting qualities. Should this be established beyond dispute, it would plainly be possible, under a system of adequate hatcheries, to pay especial attention to these particular breeds and experiment in the direction of introducing them into other waters. The depth at which the fish is most commonly to be found during the angling season necessitates the use of a heavy copper line or else very heavy sinkers, while the bait used is some form of spinner or spoon. As a general rule the slower the trolling the better will be the results, provided only that the bait continues spinning, but even in the best waters success is a matter of considerable hazard. The early morning, late afternoon and evening would appear in general to afford the best opportunities. The fish when hooked offers considerable resistance, making several rushes and using its weight to the fullest advantage, so that, in the case of large trout, the struggle is often prolonged. The weight of the sinkers or of the copper line, as the case may be, naturally militates against the liveliness of its resistance, and by many anglers the fish is, in consequence, dubbed sluggish. Where, however, in fairly shallow waters an ordinary line and heavy trolling spoon will attain a sufficient depth once hooked it will display such vigour and persistence as will satisfy the most exacting angler. In any case there are always to be found a great many people who are intensely desirous of capturing a large fish, and to these, in spite of the uncertainty of the fishing, and in spite of a possible deadness in the struggle, the lake trout will always remain a most attractive game fish.

Yellow Pickerel.

The yellow pickerel or pickerel possesses the distinction of laying claim to three other names which are in common use, namely wall-eyed

pike, pike-perch and dore, and in addition to these, the young, when pale in color, are sometimes, but especially in the Lake Erie district, styled blue pickerel, although an allied species of less commercial value and smaller size, the sand pickerel or sauger, is also commonly known under this designation. The range of the pickerel appears to extend practically all over the Province, but it occurs, perhaps, most abundantly in the great lakes and rivers falling into them. In the warm weather the fish seeks the deeper waters and is to be met with at those times by anglers in places where the cliffs descend abruptly into the depths. In the spawning season, however, which occurs early in the spring, it runs on to the gravelly or sandy bars in shoaler water, or up the rivers, for the purpose of depositing its eggs. The fish has been known to attain a great size, specimens of 25 lbs. weight having been recorded, but at the present time 10 lbs. is considered an exceptional fish and it is but rarely that an angler will be fortunate enough to secure one of such weight. The pickerel is voracious, feeding chiefly on such other fishes as it can overpower, and on those insects, frogs and crustaceans which occur in its particular locality. As a food fish it ranks particularly high, its flesh being exceptionally well flavoured, firm, white and flaky, and consequently it is not only in great demand, but most energetically pursued by the commercial net fishermen on account of its high market value, for at the present time it is rated as a commercial fish.

As a sporting fish the yellow pickerel is by no means to be despised, for not only will it offer a vigorous even though somewhat brief resistance after it is hooked, but its distribution is wide and it occurs in many waters which would otherwise be destitute of sporting fish, except perhaps a few lake trout. The pickerel will as a rule strike greedily at almost any trolling spoon or imitation minnow, and the most usual method, therefore, of angling for this fish is trolling from a boat, although in certain localities where the shore line is favourable it can frequently be captured from land. At the present time the game qualities of the pickerel are not generally appreciated by the citizens of the Province, chiefly owing to the superior merits in this respect of the black bass and speckled trout, but visitors from across the border accord it high rank among the sporting fishes, and would often as lief fish for pickerel as for any other class of fish. Consequently it would appear that the yellow pickerel should be accorded its due, and that in the lesser waters, but especially in those not inhabited by black bass or speckled trout, steps should be taken to protect it both against the commercial and domestic net fishermen. In some localities, indeed, it will undoubtedly become necessary to increase and maintain the supply of this fish by artificial means. Already a small hatchery for this purpose has been established by some enterprising citizens at Sparrow Lake. Under a system of Provincial fish hatcheries, however, to deal with the commercial fisheries, as recommended in this report, great attention would naturally be paid to the valuable pickerel, and consequently there

A Good Pool for Brook Trout on the Lower Steel River. A ½ lb. Rainbow Trout was Caught Here in 1910.

should be no difficulty at all under such circumstances in obtaining sufficient fry to stock any waters for sporting purposes that might be deemed desirable.

The Rainbow Trout.

The Rainbow Trout, although not indigenous to Provincial waters, must be accorded a place among the game fishes at present to be found in the Province. The fish, (salmo Irrideus), is a native of the waters of some of the western states of the Union and was first introduced experimentally into the St. Mary's River by the Michigan authorities some thirty years ago, as well as into various other rivers and streams of that State. In the intervening time it has thriven exceedingly and in the St. Mary's River has been known to attain a very great size, a specimen of 14 lbs. weight having been caught by angling in the Canadian waters of the Soo Rapids in 1909, while in the press of 1910 the capture in a net of a monster weighing 35 lbs. was recorded as a fact. A few of the Provincial streams in the neighborhood of Sault Ste Marie were planted with the fry of this fish, obtained by citizens of that town from the Michigan hatchery, but it is impossible to determine exactly the area in Ontario over which it is now distributed. Doubtless in the course of time it may be expected to spread west into all the streams entering Lake Superior and indeed a small specimen of about ½ lb. weight was caught as far west as the Steel River in 1910. Possibly, also, it may eventually occur in the rivers and streams flowing into the Georgian Bay or North Channel.

The Rainbow Trout feeds chiefly on shrimp, insects and larvæ of insects, while the larger specimens in the St. Mary's River are known to be fond of the cockedoosh, (a species of minnow), and of small herring. In general, however, the fish, unlike the speckled trout, is not cannibalistic, and this fact greatly facilitates the raising of young fry to the fingerling stage in hatcheries. It prefers waters as a rule of somewhat higher temperature than those most favorable to brook trout, and can be expected to spawn in Canada from about the middle of May to the middle of June, while the period of incubation should be approximately 50 days. The rainbow prefers a gravel or mixed gravel and stony bottom for spawning purposes, though if these are not available they will spawn on clean sand.

In game qualities the rainbow trout ranks very high, being held by many to excel even the brook trout in this respect. It is to be captured with a live minnow or cockedoosh, or by means of various artificial baits, such as a small trolling spoon or artificial minnow. Strips of fat pork are said also to be effective with the larger specimens, while the trout will also rise to a fly, the best for the purpose being light or bright ones, such as the Parmachine Belle and Junglecock. No more exciting sport could be desired than to tackle a large rainbow in the

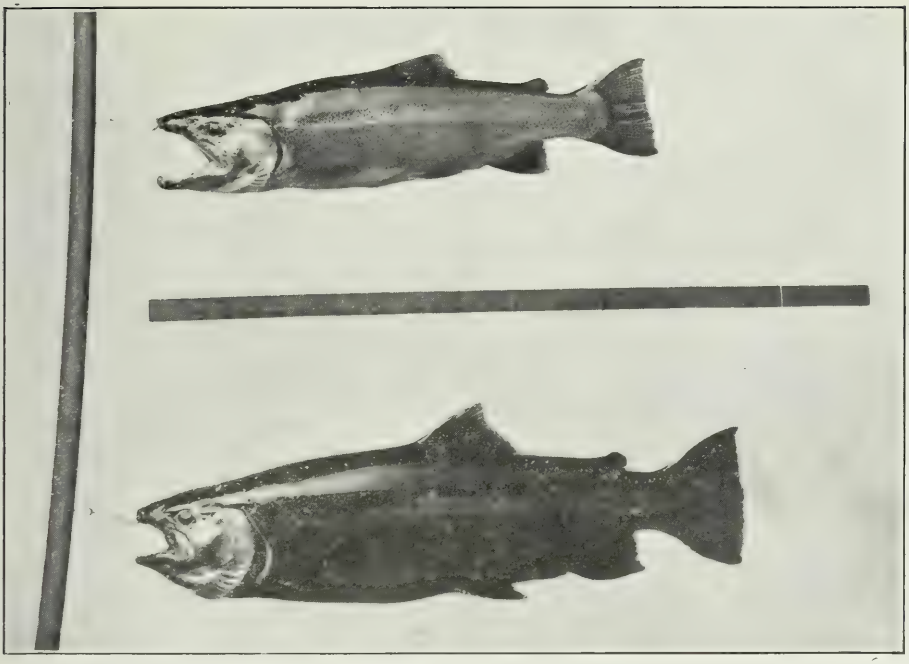
turbulent waters of the Soo Rapids, where the fish is now to be found in considerable quantities and already the fame of the fish in this particular locality is becoming widely known. It is to be noted also that as a table food the rainbow trout ranks second to none among the sporting fishes.

DISTRIBUTION AND CHIEF CHARACTERISTICS OF OTHER FISHES WHICH PROVIDE SPORT AND AMUSEMENT TO MANY ANGLERS.

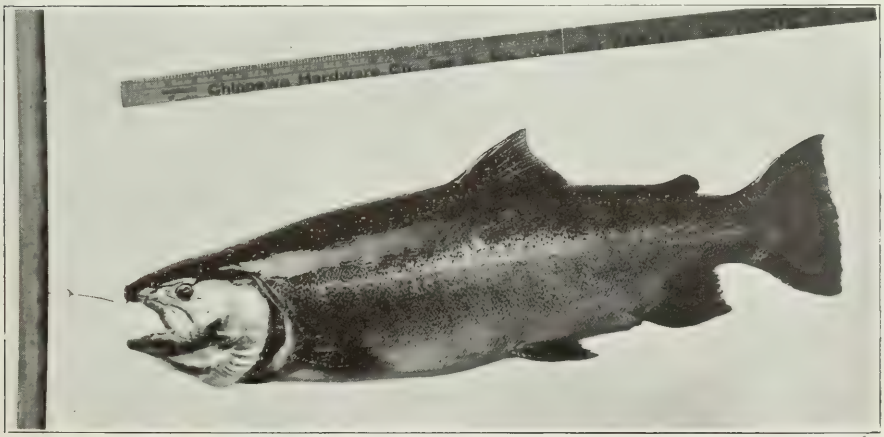
The Pike.

The common or northern pike, sometimes known as the Jackfish, is distributed throughout the Province wherever there are sufficient weeds to afford it shelter, from the extreme north in the Hudson Bay watershed to the great lakes in the south, and from eastern portions of the Province to the Rainy River District. It is a most voracious fish, feeding upon any form of animal life which it is able to overpower. It has been known to attain a very great size under favourable circumstances, but in those waters which are the more generally fished to-day it has been pursued to such an extent that specimens much in excess of 10 lbs. are now comparatively rare. The fish spawns in the early spring, as soon as the ice moves out, running up on to the rush beds or shallow, grassy places for that purpose. The females are most prolific. In general the pike is to be found in amongst the weeds, or in close vicinity thereto, lying as a rule concealed in them and darting out from its hiding place on any smaller form of animal life that passes within its range. The voracity of the pike renders its presence somewhat undesirable in those waters in which the finer classes of sporting fishes are to be found, but even in these instances, its size in particular renders it attractive to many anglers, while in other localities, more especially in some of the waters of the Hudson Bay watershed, it is frequently the only fish capable of affording sport to would-be anglers.

The pike is not as a rule accorded the rank of a sporting fish, but this is to be attributed largely to the fact that most of the angling for it occurs in the summer months when it is lying inactive amongst the weeds and, in consequence, is comparatively weak and flabby. In the autumn when the weeds have died down and this wolf of the waters is compelled to hunt for its prey in the open, it becomes a different fish, lean, active and muscular, and it is no exaggeration to say that at such times a large specimen will tax the skill and endurance of an expert angler to their uttermost and provide him with most excellent sport. Even, however, in the summer months, when it becomes quickly exhausted, the first rush and savage tugging of the fish at the line will stir the pulses of those who enjoy the sport of angling. It is most



Male and Female Rainbow Trout Caught on a Cockadoosh in the Canadian Soo Rapids, 1910.



14 lbs. Female Rainbow Trout Caught in the Canadian Soo Rapids, 1910.

usually caught by trolling with live bait, or with some form of spoon or imitation minnow.

The flesh of the pike in the spring and summer is as a rule not much esteemed, being soft and weedy in flavour, but in the autumn, when the fish has become muscular, the flesh is firm and pleasant to the taste. It is to be noted also that the Indians are at all times particularly partial to this fish and would, in many localities, eat it in preference to other, more generally deemed finer, classes of fish. In the greater fish markets there is a steady demand for pike and the fish, in consequence, is dealt with in large quantities commercially, but so prolific is it and so general its distribution that, even though it is capable of and does afford amusement and sport to thousands every year, there would appear to be no necessity for its protection excepting in the vicinity of cities and towns, and in those other localities, perhaps, where no other good angling is to be secured.

The White Bass.

The white bass should, perhaps, together with the pike, be accorded a place amongst the recognized sporting fishes. It occurs in all the great lakes, rarely, however, ascending the streams, although at times it is abundant in the mouths of the larger rivers. It rarely attains a weight in excess of 1½ lbs., and is a gregarious fish, usually swimming in shoals in considerable numbers. Its spawning season occurs in May or June. It will take the minnow bait readily and in addition in the summer months rises well to the fly, while its fighting powers are by no means to be despised. The flesh is most excellent when freshly caught.

The Speckled Bass.

The speckled bass is to be found in most of the Provincial waters from Quebec to Lake Huron, its most general habitat being ponds, lagoons, and sluggish streams where there is an abundance of aquatic vegetation, under which it will lie in wait for the insects, crustaceans and small fish which constitute the bulk of its food. It spawns in the early summer and is said to scoop out a nest in the sand much after the fashion of the black bass. The weight which it attains is not frequently much in excess of 1 lb. The fighting powers of the speckled bass, when hooked with light tackle, are by no means inconsiderable, and even though its efforts may not be very persistent, the fact that it is gregarious and that, in consequence, considerable numbers are often to be caught when a favourite haunt is discovered, renders it attractive to many anglers. As a table fish it is excellent when taken from clean waters.

The Rock Bass.

From east to west the rock bass occurs generally throughout the waters of the Province, although its northern range has not as yet been

accurately determined. It is most usually to be found in dark holes in streams and lakes, where acquatic vegetation flourishes, or in the neighborhood of docks and timber which afford shade, and it emerges towards nightfall from its retreat and roams the waters in search of the insects, crustaceans and small fish which constitute its food. Spawning in May or June, it scoops out a nest for the eggs on some gravelly or sandy bar and over this nest the parent fish mount guard until in due course the eggs are hatched and the young fry able to look after themselves.

The rock bass will afford fair sport to the angler when taken on light tackle, its chief value, however, lying in the fact that it will take almost any bait, even on the coarsest tackle, and in consequence is eagerly sought by the younger members of the population who can easily secure a good string of the fish when they are fortunate enough to discover a good place. When taken from clear, cold water, its flesh is distinctly pleasant to the taste and it is generally adjudged a very fair eating fish throughout the Province.

Perch.

The yellow perch is to be found in most of the streams and lakes throughout the Province, and is, perhaps, one of the most abundant fishes. In size it will run from ten to twelve inches, rarely, however, attaining a weight of more than 1 lb. It is a spring spawner and its flesh is so delicate in flavour that it is held in high esteem as a table fish. There are in fact few fish which excel it in this respect. The perch is not possessed of very considerable fighting qualities or determination, its chief attractiveness in regard to sport being that it is to be caught by anyone at almost any season of the year with almost any description of tackle. There can be no doubt that in the matter of drawing the residents of cities and towns out into the fresh air the perch plays no inconsiderable role, and should, therefore, be esteemed accordingly.

The Sunfish.

The yellow or common sunfish occurs in most of the waters of central and southern Ontario up to Lake Huron, beyond which it has not as yet been recorded. In size it will grow to 8 inches in length and the weight of half a pound. Spawning in May and June, the fish seeks shallow water, scooping out a nest in the sand or mud, the males guarding the nests with the greatest jealousy until the young have been hatched. This little fish affords excellent sport to many a youngster throughout the districts in which it is found, and is not to be despised as a table food.

Another variety, the blue sunfish, is to be found in certain localities, notably in some of the Rideau Lakes and in Lake Erie and its tributaries, which in habits closely resembles the yellow sunfish, but

which will reach a greater size, running sometimes in weight up to a pound. In proportion to its size it will afford the angler most excellent sport, being possessed of fighting qualities little, if any, inferior to those of any fish to be found in the Province, while as a table fish it is held in high esteem.

The Common Mullet.

The common mullet, which is the handsomest and best representative of the sucker family in Provincial waters, abounded in the great lakes from the St. Lawrence River to Lake Superior, but owing to persistent netting in the spawning season it has now become comparatively scarce. The fish passes most of its time in deep waters, but in the early spring, as soon as the ice breaks up, it runs up the rivers and streams to spawn, forcing its way through the swiftest torrents in order to reach the gravelly beds upon which it deposits its eggs. While in the streams the mullet will readily take a worm bait, and though it is by no means a vigorous fighter, owing to its weight, which frequently runs as high as 4 or 5 lbs., it will afford fair sport to the angler, especially if it be taken in the swifter waters.

The Common Catfish.

The common catfish, sometimes known as the bullhead, occurs practically throughout the Province in quiet streams, ponds or bays, especially in those having a muddy bottom. It is an omnivorous feeder, not despising anything in the shape of animal food, and will feed in all depths of water from the top to the bottom, although its most usual method is to grub about in the mud seeking for what it may devour. The catfish spawns in June, in quiet shallow waters in the vicinity of aquatic weeds, clearing out a slight depression in the sand or mud to act as a nest, over which the parent fish, but especially the male, watches with jealous care. The eggs hatch in about a week and subsequently the young, which at this stage much resemble small black tadpoles, follow the parent fish along the shores until about the middle of July, after which they scatter and shift for themselves in deep, weedy water.

As a food the catfish does not rank high in popular estimation, but this may to a large extent be attributed to its appearance, which is far from prepossessing. There are, however, many persons who prefer it to any of the coarser fishes. It can lay no claims to fighting powers, but to the small boy, and even to many older persons in the Province, the catching of a catfish with a hook and line affords a constant and healthy amusement, and in a modest form, at least a measure of true sport in its widest sense, for amongst all classes of the population there are always to be found a fair percentage of those who, like a certain squire, would rather hunt rats in a barn with a pug or fish for sticklebacks in the village stream with a piece of cotton and a bent pin than take part in the finest game yet devised by man.

THE RESTOCKING OF DEPLETED WATERS AND THE INTRODUCTION OF NEW VARIETIES OF SPORTING FISHES.

When waters have become depleted of any given variety of fish and it is desired to restock them with the same, two main considerations at once present themselves; firstly, the securing of a sufficiency of eggs, fry, fingerlings or parent fish to effect the purpose, and, secondly, that of ascertaining whether for any reason since the depletion occurred the waters have become unsuited to the life of the particular fish. It is apparent, moreover, that even in those waters which have not become depleted, but which are annually the fishing grounds of many anglers, there is liable to occur a diminution in the quantities of the sporting varieties of fish, especially so in the more restricted areas, so that if it be desired to maintain a goodly supply in them, restocking operations in these cases also become a necessity.

In order to undertake restocking operations, it is necessary to make provision for obtaining a supply of the varieties of fish which it is desired to utilize. To this end transferring mature fish from one locality to another might be effective under favourable circumstances, but as a general rule it is a matter of considerable difficulty to find localities in which the better class of sporting fishes are so abundant that a number of any one variety could be advantageously or even safely removed from them. The modern scientific hatchery, however, affords a means of attaining the desired end without materially robbing one area in order to stock or restock another. In another section of this report it has been pointed out that in order to maintain the commercial fisheries to their present yield it is practically indispensable that the Province should embark on considerable hatchery operations. Should this be done, it would obviously very much simplify the maintenance of the sporting fisheries also, for in the commercial hatcheries there would in any case be dealt with such valuable sporting fishes as the lake trout and pickerel, besides many of the coarser fishes which provide sport, and it would plainly be a simple matter to arrange for the distribution of such of these as might be required for sporting purposes. It would, moreover, entail but little additional expense or trouble to handle the eggs of the mascalonge in these commercial hatcheries. It would seem, then, that in so far as the needs of the sporting fisheries are concerned there are but two varieties of fish, indigenous to the Province, for which hatcheries, separate from the general commercial hatcheries, would have to be provided, namely the speckled trout and the black bass.

There are in existence on this continent no small number of hatcheries conducted as private enterprises from which the fry, eggs, fingerlings or mature fish of certain sporting varieties, but chiefly of the speckled trout, can be obtained. The main reason for the appearance of the private commercial hatcheries in the States has apparently been,

Long Island, N.Y., Fish Hatchery.

Long Island, N.Y., Fish Hatchery, showing system of separated tanks for Fingerling and Young Trout.

Long Island, N.Y., Fish Hatchery, showing Young Brook Trout in Tank.

not the demand for fry by anglers, but the steady demand and great price to be obtained for speckled trout on the markets of New York and other great American cities. In this Province, however, the majority of citizens would be unwilling to pay the fancy prices for this fish which prevail in the markets across the border, more especially so as it entails purchasing little more than a name, the liver-fed brook trout being devoid of nearly all the delicacy and flavour which have rendered the wild fish famous as a table dish. The great quantities of fish which have to be raised for market purposes in order to make the enterprise financially successful have resulted in the hatcheries in certain instances being able to dispose of large quantities of eggs or fry at a less cost than it would have taken the State hatcheries to produce them. In spite of this fact, however, both the uncertainty of this source of supply in the present and in the future end the constant and steadily increasing demand for brook trout eggs wherewith to restock public or private waters have led the Federal Government of the United States, as well as many of the individual States also, to interest themselves on an increasing scale in the enterprise of raising trout as a measure of profitable and sound economy. In this Province, where the sale of brook trout is forbidden, and the only market for fish artificially raised would, apparently, in any case be Toronto, and at that a most limited one, it would appear impossible that for many years to come the private commercial brook trout hatchery should be a profitable enterprise, or that eggs or fry could be obtained in sufficient quantities from private Canadian sources to meet the needs of the Province at lower prices than those at which they could be produced by Provincial hatcheries, while to rely on the private firms of a foreign nation for a future supply would seem far from desirable or wise. It would appear, therefore, that in regard to brook trout where restocking measures have to be instituted as a permanent undertaking, as should undoubtedly be the case in this Province, the Government might well embark on the undertaking, and insure through the institution of special provincial brook trout hatcheries an adequate supply of fry or fingerlings being always obtainable.

One of the main factors, if not the main factor, in a successful brook trout hatchery is an abundant supply of cold, clear water, such as is not to be found in every locality, but in the region of the north shore of Lake Superior conditions in this respect are peculiarly favorable. The speckled trout in these waters, moreover, are of the first quality, and this fact together with the actual and potential value of the whole region, but of the Nipigon district in particular, as a resort for speckled trout anglers, not only most undoubtedly singles it out as the logical site for an extensive provincial brook trout hatchery, but renders certain also that the initial outlay and running expenses would be more than counterbalanced by the benefits to be derived from it. There can be no question,

in fact, that the first brook trout hatchery of the Province should be established on or in the vicinity of the Nipigon River. Subsequently, additional brook trout hatcheries could be established with advantage in such localities as, for instance, the Algonquin National Park, and cases might also occur in the interior portions of the Province where this fish might be advantageously handled by small branch commercial fish hatcheries in conjunction with lake trout, pickerel or other local fishes; when it was found, in fact, more economical to do so than to transport the ova or fry considerable distances to and from the larger hatcheries, but when the system of hatcheries had once been established in the Province, the cost of the institution and running of these small branch hatcheries would be so inconsiderable that it would impose no appreciable burden on the Provincial Treasury.

In the case of the black bass, which will not allow itself to be stripped of its spawn or milt and consequently cannot be handled by the ordinary means employed in the ordinary commercial fish hatcheries, it would be necessary to establish bass breeding ponds at various points throughout the bass region, for as compared with many other fishes the bass produces but a small number of eggs and the difficulty of obtaining a sufficient supply of fry or fingerlings is, therefore, proportionately increased. Of all the sporting fishes of the Province, however, the black bass is undoubtedly at the present time the most important, not only for the magnificent sport which it affords alike to citizens and visitors, but from the fact that it is unaffected by the onward march of civilization and will continue to thrive in waters surrounded by cleared and cultivated lands in consequence of which, as the more cleared areas are likewise the most densely populated and the most easily accessible, it fills the angling needs of a greater percentage of the provincial population and the visitors from abroad than does any other sporting fish. It is evident, therefore, that the comparatively small expense involved in the establishment and maintenance of a few series of bass breeding ponds through the bass regions of the Province would be more than justified by the importance of the results to be obtained from them. Already in the neighborhood of Brantford one such series of breeding ponds has been established by the Province and the extension of this undertaking to other localities would appear to be most desirable. It is to be noted, however, that as in the case of the commercial fish hatcheries it would in all cases be expedient to determine scientifically the suitability of the site for the hatchery before attempting its establishment.

In regard to the question as to whether the conditions prevailing in waters which have once become depleted will allow of effective restocking, this is plainly a matter for scientific determination. Measures may have to be undertaken, such as the removal of coarse or predaceous fishes, before the plantation of fry or fingerlings would be productive of results, while, again, as in the case of the brook trout, provision

might have to be made for shade and a steady flow of the waters before the fish could be expected to thrive, and, further, such matters as the present condition of the aquatic vegetation and the continued prevalence of a sufficient supply of food would have to be taken into consideration, for it is always possible that the local conditions may have altered in these respects, or that gradual changes occurring in regard to them may have played no inconsiderable part in the disappearance of the fish from the waters. It may, perhaps, be interesting to note that in the Adirondacks, since the cultivation of the forest has been seriously undertaken, resulting not only in the provision of shade but also in a more steady flow of the waters in that region, it has been found possible successfully to reintroduce speckled trout into the headwaters of streams from which this fish had long since disappeared, so that it might, apparently, still be feasible to restock some of the streams and rivers of the less settled portions of central Ontario with this popular sporting fish under careful and adequate direction. Where it is desired to introduce fish, indigenous to the Province, into provincial waters in which they have not previously occurred, the same necessity would exist for a careful scientific investigation, for it is plainly but waste of time, effort and money to plant fish in waters which do not contain suitable food or in which the general environment is unadapted to their life.

The introduction into a country of any new form of wild animal life is fraught with considerable risk and uncertainty, not only in regard to whether the creature will itself thrive under the new conditions, but also in respect of the effect its appearance will have on indigenous species. There are, however, to be found in almost every community those who, in the course of their travels abroad, become enthused with the sporting or edible qualities of some beast, bird or fish, which is not indigenous to their native soil or to the locality in which they live, and without consideration of the results that may ensue or of the feasibility of the experiment, clamor for its introduction into their own district. Undoubtedly even in Ontario, with all its advantages in magnificent fisheries and extensive hunting grounds for wild fowl and larger game, there are localities into which new varieties of sporting creatures could with advantage be introduced, but it would appear safe to say that in general expert opinion should first be obtained as to the advisability of such a measure, particularly so in the case of fish, where the existence of suitable food for all stages of its life can only be ascertained by scientific research.

Two new varieties of fish, at least, have been introduced into provincial waters within the last thirty years, the carp and the rainbow trout, chiefly through the agency of American enterprise. To the former of these a separate section of this report has been devoted, so that it will suffice here to note that not only have such sporting qualifications as it possesses so far been ignored by the citizens of Ontario, but

that its excessive and totally unexpected increase in certain localities is held by the majority of sportsmen to have worked considerable havoc both in regard to the sporting fisheries and the wild duck shooting. However this may be, it must at least be acknowledged that there is a substratum of truth to their accusations, and that, consequently, the instance of the carp well emphasizes the dangers which attend the introduction of new varieties of fish into waters already well stocked with fine species and from which no human agency as yet devised can ever entirely remove them. The rainbow trout is a native of the Pacific coast region, and as noted in a previous section is already comparatively abundant in the Canadian waters of the Soo and vicinity, and further, is apparently spreading into other waters which are the habitat of the speckled trout. The comparative sporting qualities of this fish with those of the speckled trout afford material for a divergence of opinion amongst sportsmen, but it would appear in general that the two varieties do not, as a rule, harmonize well, and that, therefore, as the rainbow will usually attain the greater size, it is the speckled trout which is the most likely to suffer. The region of the north shore of Lake Superior is so well furnished with and adapted to speckled trout that no improvement from the point of sport could have been desired other than that these fisheries should have been jealously conserved and maintained to the highest point of abundance. The advent of the rainbow trout, however, will almost certainly have some effect on the speckled trout in this area in the future, particularly in the lower reaches of the rivers which are, as a rule, the warmest and, therefore, the most favorable to its growth, and this fact is to be deplored, for not only is there doubt as to the sporting merits of the rainbow as compared with the speckled trout, but unquestionably the historic sporting qualities of the latter fish render its attractive power in regard to angler visitors vastly greater than those of the less famous rainbow. While plainly nothing can now be done to check its natural encroachment on this region, at least it would appear the part of wisdom not to assist it by permitting any further plantations in Canadian waters throughout this district.

There are cases in the Province of more or less isolated waters destitute of sporting fishes, and other cases, such as the Rainy River District, where the pickerel and lake trout, in none too great abundance, are practically the only high class sporting fishes to be found throughout a considerable area, where the introduction of some sporting variety of fish would be of material advantage to the neighborhood. Undoubtedly in many of such instances scientific research would disclose the possibility of successfully introducing one or other species of game fish to be found either in the Province or without its borders. The ouinaniche of the eastern Provinces, the goldeye of Manitoba, and the cutthroat trout of Alberta are, for instance, game fishes of the highest class and might be used for this purpose where favorable conditions were found to exist in addition to or in preference to provincial varieties.

Indeed, it would appear that a system of interprovincial co-operation might easily be developed whereby supplies of such fish or their spawn, occurring in one Province and desired by another, might be obtained in exchange for other fishes or their spawn produced in that Province. Such a system would plainly be to the benefit of the Dominion and, at the same time, in the best interests not only of economy, but also of sport in the various Provinces. In all cases, however, the material benefits to be derived from the introduction of a foreign species should be clearly established, and its relation to other sporting fishes most fully weighed in the balance before such experiments are attempted.

The Pollution of Waters.

Many varieties of fish, but more especially the finer forms, such as the speckled trout and the black bass, will only thrive in such waters as are clean and clear. All varieties of fish are affected in comparatively restricted waters by the introduction into them of noxious chemical matter. The progress of civilization is attended by the appearance of towns and villages on the shores of lakes and on the banks of rivers, from which there will find its way into the waters a greater or less amount of sewage. Fortunately, however, the baneful effects of the dumping of sewage into such restricted waters has become generally recognized, and various methods have been devised for treating it, so that in the case of the larger towns, at least, the waters of the Province should cease to be materially polluted from this source. It is to be noted, however, that in certain localities the presence of quantities of sewage in the water has undoubtedly in the past contributed materially to the disappearance of both the brook trout and black bass, and that even if the weightier considerations of the health of the residents who live below the spot at which the sewage enters did not exist, it would still be of the utmost importance from the point of view alone of the maintenance of the sporting fisheries to check this evil to the uttermost possible extent.

In so far as the fisheries are concerned the most destructive pollution is not, however, as a rule, effected by deposits of sewage, but by waste products of certain factories, highly charged with chemicals and deadly alike to animal and vegetable life, or else, as in the case of sawdust, particularly dangerous to fishes, especially those of the finer and more delicate varieties. There are on the statute book regulations which prohibit the depositing of such matter in the waters of the Province, but unfortunately it has to be recorded that in general these excellent regulations are not strictly enforced; in some cases, even, not enforced at all; with the consequence that material damage continues to be wrought by this means to the sporting fisheries. It would seem, therefore, of the greatest importance that steps should at once be taken to secure the rigid enforcement of the laws in regard to water pollution

throughout the Province, and that, as the fault in general lies with companies or individuals in a more or less prosperous condition financially, the penalties for any infringements of these laws should be made proportionately high.

The great resources of Ontario in timber would appear to indicate that in the by no means distant future there will become established in the various sections of the Province large and important paper mills. The localities in which this is the most likely to occur are, as a rule, those in which the rivers that would be largely utilized for driving the logs to the mills contain in abundance some of the finest classes of sporting fishes, and it is to be noted that the waste products of sulphide mills are particularly injurious to fish life. There has, however, been discovered a process of utilizing these waste products, and already in the Adirondacks it has been put into operation in connection with sulphide mills there established. By this process a material is manufactured to which the trade name of glutrin has been given, and which is used for briquetting, moulding and various other purposes. It has, moreover, been successfully demonstrated that, run in connection with a sulphide mill as a by-product, the operating expenses of producing glutrin will be more than covered by the profits, so that it would seem advantageous to give this fact the widest possible publicity amongst those who are at present, or will be in the future, interested in the establishment and operation of paper mills. There can under no circumstances ever be the slightest excuse for permitting the pollution of waters and the consequent destruction of fish by factories which make use of chemicals, for there are in every instance well known methods of destroying and rendering innocuous the waste products which it is a matter of but slight expense to provide for, but especially so is this the case when means are available for converting the waste products into even a slight profit. The harm wrought to the sporting fisheries by the chemical pollution of rivers and streams in the past has been so great and so apparent that it plainly behooves the authorities to see to it that no further damage is effected in this direction, especially in those regions which have hitherto escaped this great evil.

Limitation of Catch.

In the case of five of the most important sporting fishes of the Province regulations have been enacted by the Dominion Government limiting the numbers of such fishes which may be killed and carried away by any one angler in any one day, and forbidding the killing of fish of less than stated dimensions, the actual measurements varying in each particular case. The fish in question are: The small-mouthed black bass, large-mouthed black bass, mascalonge, speckled trout and pickerel.

It cannot be gainsaid that the limitation of catch is a most wise

and necessary precaution to provide against an excessive drain being placed on the sporting fisheries of the Province, for not only are the numbers of the sporting fishes strictly limited in the localities in which angling for them can be enjoyed, but also, although credit must be given to the average sportsman of voluntarily limiting his catch to what he knows can be used, for the sale of these fishes, with the exception of the pickerel, is forbidden, there are always to be found a minority of anglers whose chief aim and ambition is to secure a bag of inordinate size, to the extent, if possible, of establishing a record, quite regardless of whether the fish killed can be used for food or whether they will have to be wasted. In the past, before the enactment of restrictions, great strings of fish of all these varieties were secured by individual anglers within the space of a few hours in various sections of the Province, and the publication of photographs of these hauls and accounts of these exploits in the daily and sporting press undoubtedly fired the imagination and desire of many a would-be record breaker to go and do better if he could. In all probability the Province thus secured a considerable advertisement in the angling circles of the continent, but the price in certain instances was high, for as the population grew and the stream of visitors from outside increased, the finest fisheries gradually showed signs of becoming exhausted, and even the introduction of the limitation of catch has not yet succeeded in effecting their rehabilitation. The practical impossibility of supervising the catch of each individual angler where thousands throughout the Province are out on the waters at the same time is apparent, and it would seem, therefore, that the time has arrived when some steps should be taken officially to put a stop to the publication or display of pictures which represent individual catches of game fishes in excess of the numbers fixed by law, for as before noted some persons will inevitably be incited thereby to seek to emulate or surpass the feat recorded. This cannot but result in material harm to the sporting fisheries which, through the Province at large, are not in such a flourishing condition as to warrant any unnecessary strain being placed upon them. Undoubtedly both the pictorial press and the railways, who have been the chief offenders in this respect, would be only too willing to co-operate with the Government if the matter were properly placed before them, and it would, therefore, seem that steps should at once be taken to this end.

A point has arisen in connection with the clauses dealing with the limitation of catch which has already given rise to considerable discussion and some ill-feeling, and which, although the matter has been referred to the authorities at Ottawa, has not as yet been officially ruled upon. Inasmuch as this question is likely to have a considerable effect on the annual influx of visiting anglers, it is without doubt of great importance to the Province.

The clauses dealing with the limitation of catch of black bass read as follows:

BASS.

(*c*) No one shall fish for, catch or kill in any of the waters of the Province in one day by angling, or shall carry away a greater number than eight small or large mouthed black bass.

(*d*) No small or large mouthed black bass less than ten inches in length shall be retained or kept out of the water, sold, offered or exposed for sale or had in possession, but anyone who takes or catches such fish of less than the minimum measurement named, which measurement shall be from the point of the nose to the centre of the tail, shall immediately return such fish to the water from which it was taken, alive and uninjured.

The point at issue is whether the angler must of necessity cease angling when he shall have successfully landed eight fish of legal size, or whether it is legal and within the spirit of the law for him to return such uninjured fish of legal size as he chooses alive to the waters and continue fishing so long as he desires, or until he has actually killed eight fish.

In nearly all good bass waters there are times and occasions when the angler will be fortunate enough not only to find the fish striking greedily at his bait, but also some particular spot in which the fish are congregated thickly. In those waters in which the fish are the most abundant this will occur the more frequently, and these localities are, as a rule, the principal resorts of visiting anglers. To the majority of sportsmen much of the pleasure of angling for black bass lies in the struggle with the fish after it has been hooked. Frequently it will occur that the bass cannot be induced to take the lure through long hours of monotonous angling, so that when patience and persistence are rewarded by the discovery of some spot in which the fish are both abundant and eager to bite, the angler for the nonce is in an earthly paradise and naturally desirous of making the uttermost of his opportunities. On such occasions, however, it is plain that to those who wished to abide by the spirit of the law the period of enjoyment would be most brief if the law is to be interpreted in its apparently literal sense, namely, that it is illegal to "fish for" more than eight fish of the legal size, regardless of whether or not those landed in an uninjured condition have been returned to the waters. When it is considered that the visiting angler, and, in many cases, also the resident of the Province, is put to considerable expense to secure his sport, and, moreover, that the non-resident is charged a fee of $2.00 for angling in provincial waters, it is apparent that visitors and citizens alike will be apt to protest at having their sport for the day curtailed, perhaps, to the short space of one-half hour, more especially when they have not even killed their limit of fish as allowed by law in order to avoid waste. This fact has been well illustrated, indeed, by letters, from non-residents especially, which have appeared in the public press, asking for an interpretation of

the law, and declaring that if no more than eight bass of legal size could be angled for, even though the uninjured fish were carefully returned to the waters to furnish sport for themselves or brother anglers on some future occasion, not only would they and their immediate friends, who desired to abide by the spirit of the angling regulations, refrain from angling in the future, or discontinue their annual visits to the Province, as the case might be, but that thousands of others would be similarly affected, thus clearly indicating the great economic factor at stake in the decision of this problem.

The black bass can be captured on a variety of baits, those in most ordinary use being the common trolling spoon with a three hook gang at the rear end, the single hook or, possibly, two small hooks with an angle-worm, minnow or frog attached thereto, and the fly, which is, of course, a single hook. In a great many cases, but more especially when the single hook is being used, the fish will be hooked in the tough membrane of the lip or mouth, and in such instances the hook can be removed without in any way injuring the fish if care is taken first to wet the hand before handling it, the rubbing of a dry hand being liable to cause fungus to appear on the fish if it is subsequently returned to the water. The bass, indeed, is such a hardy fish generally that unless it is hooked in the gills or swallows the bait so that the hook or hooks cannot be removed without injuring the gills, it will suffer no evil effects either from its struggles or from the slight handling that is necessary to release it, and, in fact, has been known beyond dispute to take the bait again within a short period of its return to the water. Hence it will be seen that there would be reasonable grounds for complaint in a regulation which forbade the "fishing for" more than eight fish of legal size where the uninjured fish were carefully returned to the water by the angler.

Undoubtedly it may be argued that there is a danger, if it is deemed lawful for an angler to catch as many bass as he chooses, provided that he does not kill or injure more than the legal limit, thus leaving it to his discretion to decide as to which fish are uninjured, that instances might occur where seriously wounded fish would be thrown back into the water, but it is to be noted that the same danger exists if the angler is restricted to "fishing for" eight fish of legal size, so that it does not materially affect the question. Moreover, in most localities where it would be possible comparatively often to exceed the limit if so desired, which ever way it might be construed, a great proportion of the angling, especially that done by visitors, is carried on under the eyes of licensed guides, who not only by virtue of their licenses are bound to see that the angling laws are obeyed, but have also, as a rule, the additional incentive or personal profit to urge them to do so, seeing that if the fisheries wane, so in proportion will the number of tourists who provide them with such profitable employment. These men, therefore, could in the majority of cases, at least, be counted on to see that injured fish

were killed, even if by so doing sport had to be abandoned for the day.

It cannot be denied, however, that when angling is carried on with gangs of hooks, the probability of seriously injuring the fish is very much greater than when single hooks are used, and it would seem, therefore, that while in general there is no likelihood of material injury to the black bass fisheries occurring through the capture of numbers of fish by individual anglers, so be that the uninjured fish are carefully returned to the water and the total kill is not in excess of the legal number, it might be advisable to continue the present presumptive restriction against "fishing for" more than the legal limit that may be killed when this class of bait is used.

An interesting feature of the present regulations is that while "fishing for" more than eight bass of legal size can be construed as illegal, this provision cannot apparently apply to fish of less than legal size, for, as shown by the clauses previously quoted, special provision is made in regard to these, not only that they are to be returned to the water alive and uninjured, but also that it is illegal to keep or retain them out of the water or to have them in possession. Consequently, it would seem that no matter how many undersized fish an angler might take, nor how many of them he might seriously or mortally injure, he could not under the law retain them out of the water, much less count them as part of his legal kill. This, it must be allowed, is somewhat of an anomaly, for the young fish are, potentially at least, as valuable as the older, and, moreover, the young fish are also likely to be the most delicate and, therefore, the most easily injured. So voracious is the bass that the size of the bait in general use for the larger fish will not deter the smaller fish from taking it, provided that it can get it into its mouth, or in many cases of striking at it even if it cannot, so that especially in trolling with a spoon in localities where bass abound, it is evident what destruction of young bass may easily occur. It is, of course, a wise precaution to limit the size at which fish may be legally taken, but it is obviously of little avail to return fishes of less than legal dimensions to the water only to suffer and die. Rather would it appear that where little bass are injured the law should compel their retention as part of the legal count. Objection might be taken to such a regulation as opening the way to the destruction of uninjured, undersized fish by anglers who were unable to secure larger ones, and unquestionably the present regulations were devised to meet this contingency. Doubtless under the present regulations some undersized fish are illegally killed and retained, and doubtless, also, this would be the case if the regulations were amended as suggested, but the majority of anglers are sportsmen, anxious to abide by the law, and this fact, together with the prevalence of the licensed guide in the districts in which the best fishing is to be secured, would seem to afford a guarantee against any such eventuality on a large scale. It might again be argued that it would be a hardship to the angler to compel him to count in his day's limit such

small fish as he was unfortunate enough to injure, but the majority of such cases would occur when trolling with a spoon and gang of hooks, and, if it were ruled legal to "fish for" more than the legal number provided the uninjured fish were returned to the water, plainly it would be within the discretion of the angler to change his bait to a single hook and thus greatly minimize the chances of having his sport brought to a premature conclusion owing to the capture and injury of small fishes. In this regard, also, it may be noted that there is on the market to-day a barbless hook which, while possibly not quite so effective as the barbed variety, is none the less highly efficacious. Most of the injuries that fish receive can be directly attributed to the agency of the barb, so that the possession of a few barbless hooks should still further tend to prolong the period of sport open to the angler whose catch is nearing its legal limit.

In regard to brook trout, the restrictions imposed vary from those affecting the black bass in that a weight of fish that may be caught, namely, 10 lbs., is mentioned, while the number of fish that may be killed is placed at thirty and the legal limit of size at six inches, the double restriction as to weight and size having been devised to meet the great difference in dimensions at which the trout will mature under varying conditions. With these exceptions the wording of the regulation is in general precisely similar, and much of what has been written in regard to the black bass applies equally in this case.

The trout can be caught on the fly by trolling with a spoon or other artificial bait, or with the angle-worm or live minnow, and it is plain that some fish will be injured and some uninjured when landed. Moreover, there is the same question as to the interpretation of the law in regard to what number of fish may be fished for and whether it is within the spirit of the law to return uninjured fish to the water and to continue angling, although the actual weight or number of fish landed may be in excess of that allowed by law.

The brook trout, however, is in the majority of cases less rugged a fish than the black bass and, in consequence, is more likely to be injured in the process of handling, even though the hand be carefully wetted and every precaution taken. It is not intended in the least to imply that the fish cannot be returned to the waters to live and thrive, for undoubtedly many instances could be adduced to the contrary, but the comparative delicacy of the fish would at all events appear to be an argument in favor of restricting the number of trout which may be "fished for" to the number which may be caught. Another point, also, to be noted in this regard is that in the more populated and accessible portions of the Province where the brook trout does occur, it does not, as a rule, run to a very great size, so that neither from the point of view of the weight or of the numbers which he might legally catch could the angler claim that any undue hardship was being inflicted on him. In fact, only in one section of the Province, the region to the north of Lake

Superior, where the trout sometimes run to a weight of several pounds and where, consequently, ten pounds of trout might under favorable conditions be quickly secured, would there appear to be any possible argument in favor of interpreting the present law other than in its apparently literal sense, or of amending it, and even there the bulk of the country is so wild that the numbers of anglers who penetrate into it are comparatively limited, so that there is but a limited capacity for the consumption of the fish, while, on the other hand, where trout is required for food purposes, it would be, and actually is, taken without consideration of the restrictions imposed by law. In certain portions of this region, where there was adequate supervision, it might perhaps be advantageous to amend the law as suggested for black bass, but where adequate supervision in this region cannot be provided and throughout the remaining portions of the Province it would appear best in regard to brook trout fishing that the present regulations as to the weight and numbers of fish that may be caught should remain in force and be construed in their most literal sense.

In the matter of returning all brook trout of less than six inches in length to the water, much the same arguments could obviously be advanced as in the case of the black bass. The problem is not, however, entirely analogous. While undoubtedly in some little streams where brook trout exist the fish will mature at six inches, in the bulk of the brook trout waters of the Province it will attain a considerably larger size. In those streams where it runs smallest the very size of the fish will preclude offering it bait other than on a very small hook, while in other waters where larger trout exist, although it may fall a victim to the fly in ordinary local use, a trout of less than six inches will, as a rule, refrain from attempting to swallow such bait as spoons and imitation minnows, the coarse hooks of which frequently cause such serious injury to the fish, for the very appearance and size of the lure, resembling, in fact, that of some swimming fish, would be calculated to drive the young trout into shelter, seeing that the larger specimens of even its own tribe would most gladly devour it, with which fact it is instinctively well acquainted. Consequently, the bulk of the fish below legal limit that would be caught would be landed by a small hook lodged in the tough membrane of the mouth in all probability, and not, as in the case of the young bass, by impaling themselves more or less severely on the barbs of larger hooks, for the bass of between eight and ten inches can plainly, and will, tackle a very much larger bait than ever could a little trout of between four to six inches. It would seem, therefore, that a higher percentage of the young trout caught than of young bass should be landed uninjured, and taking all things into consideration, in the case where all the undersized of both varieties had to be returned to the water regardless of whether they were injured or not, a higher percentage should, also, live. In addition to this the very nature of the waters in which young trout are usually most abundant render

them peculiarly easy to fish, much more so than in the case of young bass, so that it is unadvisable to give the slightest loophole for the taking of young fish in quantities, more especially so when it is remembered that even the very little trout are highly prized for the table, and, although the traffic is illegal, command a high price in many localities, a thing which cannot be said of the very small bass. It would, then, on the whole, in the case of brook trout appear to be inexpedient to effect any change in the present law which requires all fish of a less length than six inches to be returned to the water.

But four mascalonge may be killed by an angler in one day, but in regard to this fish it is to be noted that the size of the hook in common use for its capture, as well as the method of taking the bait which is typical of the fish, practically exclude the possibility of returning the larger specimens, at least, uninjured to the water. In view of these facts, as also that longe grounds are none too plentiful, that in them longe of 10 lbs. are quite frequently to be caught, and that the fish will run to such a size as 40 or 50 lbs., it must be admitted that four fish is an ample bag for one angler in one day. The angler, therefore, should be satisfied to rest content with the fortune of war in the matter of what sized fish he may succeed in landing, and should not be allowed to "fish for" more than the number of legal sized fish that he is allowed by law to kill.

Mascalonge of less than 24 inches may not be retained, but must be returned alive and uninjured to the water. A fish of even twenty inches is already of a good size, with a large enough mouth to swallow any ordinary bait, so that it is apparent that so far as injuring the undersized fish is concerned, it is practically without the power of the angler to prevent it. In fact, in the great majority of cases the small longe will be more or less seriously injured before it can be released from the hook. Moreover, so vigorous and vicious are even comparatively small specimens of this fish, and so sharp their teeth, that but few anglers would care to attempt to remove the bait from the mouths of any of them without taking the wise precaution of stunning it. The effect of the blow necessary to accomplish this, added to the almost inevitable wounds accompanying the removal of the bait, render it doubtful whether in the majority of cases the young fish will recover, even though returned to the water, more especially seeing that, while helpless and wounded, it is an easy prey for its enemies, the larger specimens of its own kind and the common pike. To fulfil the requirements of the law in this respect would appear, then, in general to be impossible.

Trolling for longe over the grounds which it inhabits it is impossible to foretell what sized fish will take the bait. It would plainly be a hardship to the angler to require him to give over angling when he had secured four small longe under the legal limit, but, on the other hand, it might be urged that some effort should be made to check the waste of young fish and that, after an angler had landed six or eight

undersized fish, he should be required to cease angling. The majority of longe anglers are, however, out after the large fish, and regard the small fish as a nuisance which they would gladly avoid, and seeing that angling for longe is apt to be a strenuous pleasure if a large fish is hooked and that the spirit of the sport itself is a hard tussle with a strong and vigorous fish, only those who enjoy the exercise of a prolonged and exhausting fight will in general indulge in it to any extent. To obtain this sport many of them will have come from afar and will have but a limited time at their disposal to enjoy it, so that in as much as the majority of them can be counted on not to cause any undue waste by deliberately angling for undersized fish, it would appear inexpedient to penalize them to the extent of forcing them to abandon angling for the day should they be unfortunate enough to hook and land a few undersized fishes which, after all, would afford them but poor sport for the money they were expending. It would seem, therefore, best in the case of the undersized mascalonge to allow the present law to stand unaltered in its literal sense.

Finally in regard to pickerel, the catch of which is limited to twelve, and the legal size placed at fifteen inches, it is to be noted that in the majority of waters in which pickerel are to be found it will not often occur that more than twelve of the fish of legal size will be taken in a reasonable day's angling, for it lives, as a rule, in the deeper waters and trolling for it over a considerable area is the only and somewhat uncertain means of securing it. There are, of course, exceptional instances of localities in which it is particularly abundant, where angling for it can be carried on successfully from the shore, or catches in excess of the legal number made within a short space of time, but even in such cases the bait most frequently in use would be the trolling spoon or imitation minnow, with its gangs of hooks, and consequently, although a very hardy and robust fish, it would be liable very often to suffer material injury when the bait was being removed, even had it escaped serious damage while in the water. In view of these facts, and seeing that the capture of twelve of as sporting a fish as the pickerel, of a greater length than fifteen inches, should under any circumstances be considered a good day's sport by anyone, it would seem advisable that angling operations should be brought to a close when the legal limit has been landed, even though, perchance, some specimens may have been returned uninjured to the water.

In regard to the question of returning the undersized fish to the water, it is plain that where they swallow a bait intended for a larger fish they will be all the more likely to be seriously injured. On the other hand, the danger of catching great quantities of such undersized fishes would not appear to be great, except, perhaps, in isolated instances, so that as the loss to the fisheries would not be very serious even in the event of a large percentage of those returned to the water subsequently dying, it would, perhaps, be more advantageous to allow the present law to stand than to attempt to amend it.

A feature peculiar to the pickerel fisheries is that the pickerel is the only fish in the Province, recognized alike as a commercial and sporting variety, on which a limitation of catch is imposed in regard to anglers. It is evident that in those localities where commercial netting and angling are carried on side by side, the angler has just cause to complain of any restriction being imposed on his catch when no such restriction affects the commercial net fisherman, whose operations are, as a rule, by far the most deadly. As pointed out previously, however, the pickerel has only of recent years come to be recognized as a sporting fish of high class in this Province, and doubtless the limitation of catch imposed by law was introduced to meet the needs of certain restricted waters where the pickerel was the leading sporting fish, and where, as a rule, no commercial netting was being conducted. In such cases it is plainly necessary to limit the number of fish which may daily be removed by any one angler. The pickerel is, of course, a fish of the highest commercial value, and in view of this fact, as also that it is largely a deep water fish, it would evidently be inexpedient generally to bar its commercial exploitation in the waters of the great lakes, but having regard to the rapid advance in popularity of the fish amongst citizen anglers and the indisputable attraction it possesses for American visitors, it would seem that, as pointed out in a previous section, the time has perhaps arrived when commercial netting for it should not be permitted outside of the waters of the great lakes, or at least in those localities where it affords sport to a large number of either citizens or visitors.

Minnow Seines.

One of the best baits for small or large mouthed black bass, pickerel and speckled trout is the minnow, which is one of the natural foods of the fishes. There is, in consequence, a great demand for minnows in most parts of the Province in which anglers from within and without congregate during the summer months. At the present time the law forbids the seining of minnows other than under license, and the angler who desires to make use of the little fishes as bait must either secure them from some person who possesses a seining license, or else capture them himself by some other means, such as a small dip net. The minnow seine license costs $5.00, entitling the licensee to 30 feet of seine net and, as for bait purposes the live minnow is greatly superior to the dead, it is usual for those holding these licenses to possess some form of minnow pail in which they store the minnows pending a demand for them, eventually retailing them to the angler at prices varying from one to three cents per fish.

There are in this Province a great variety of small fishes which never attain a length of more than two or three inches and which are commonly styled minnows, but, broadly speaking, it may be said that the minnow when free in the water is lively, active and wary, only

abounding in such shallow places where food is plentiful, so that for practical purposes it is impossible for the majority of anglers to secure a sufficiency of them without having recourse to some holder of a minnow seine license, for not only are their favorite haunts frequently at some distance from the town or village, but even when these have been reached, the dip net will prove too cumbersome a weapon to effect the capture of more than a stray specimen or two sufficiently large to be suitable for angling purposes.

Thus it will be seen that the possession of a minnow seine license is of considerable pecuniary value to the holder, for a species of local monopoly is created and, as the demand increases, so can the charge in proportion if the licensee so desires, for there is no restriction placed on the price at which the little fishes may be retailed. Moreover, the supply available will depend largely on the energy of the licensee. In various instances it has occurred that the local supply of minnows was greatly below the demand, which appeared to be due either to the laziness of the licensee or to his unwillingness to pay for adequate help, and in such cases not only are the complaints of the anglers most vigorous, but also those of hotel keepers and merchants generally who are interested in the summer tourist traffic, for it is apparent to them that such conditions are not favorable even to a maintenance of the trade, but, on the contrary, are calculated to damage it materially. The price, also, in such cases will almost invariably soar, for there will, as a rule, be found one or two individuals prepared to pay without after-thought any sum, provided only they get what they require, and this entails a hardship on the generality of anglers whose funds are not unlimited, and cannot but be prejudicial in its effect on the tourist traffic in the district. It is plain that where during three or four months of the year there are a number of anglers anxious to purchase one or two dozen minnows six days in the week, the possession of a license should net the licensee from $2.00 to $4.00 or more per diem, and, moreover, unlike the guide whose license costs $2.00 and whose wages average from $2.00 to $3.00 per diem, so long as there are anglers, so long will his trade be steady and continuous, for it is independent of the personal caprice of the individual angler or of popular reputation. If, therefore, the licensee discovers that by raising the price of his minnows he can continue to make an undiminished income with considerably less effort to himself, or at less expense if he engages help, it is quite likely that he will be tempted to do so without regard to those whom he is injuring by so doing. It would, of course, be possible by issuing more than one license to a locality to create competition, and thus not only keep prices down but at the same time ensure a sufficient supply to meet the local demand. The main objections to such a course are, however, that in by far the greater number of cases there is only enough work in this line adequately to compensate one man who makes a genuine business of it, taking into consideration the help that he might have to hire and the

time that he would have to devote to it, and, secondly, that it would tend to an undue destruction of small fishes, which are one of the main foods of many of the best sporting fishes, for each licensee would be careful always to have an abundant supply in order not to lose his proportion of the trade, and the minnows cannot be retained alive in captivity for very long periods.

It would seem, therefore, that so long as the seining of minnows can only be legally conducted under license special care should be taken to ascertain that the licensees are supplying the needs of the public to the best of their ability, and not to re-issue a license to any man who through lack of energy or for other reasons within his control fails to produce a supply equal to the demand or abuses his privilege by the imposition of exorbitant charges.

Already the expenses of the angler visitors are by no means inconsiderable, including as they often do not only board, but the hire of one or more guides, oarsmen, canoes, boats, launches, etc., and it becomes, therefore, a question whether it is really advisable to place the additional burden upon them of forcing them to purchase their minnows. In any event there would always be those who preferred to do so rather than take the trouble themselves, so that there would always be likely to be some trade in this direction. It would, as a rule, seem impracticable for the guides, the major part of whose day is spent on the waters with the anglers, to undertake to provide minnows, and, consequently, an independent individual would apparently be enabled to carry on the business at a profit. There are, however, many anglers to whom expense is a great consideration, who would much prefer to take the trouble of securing their own bait, seeing that by so doing they would save several dollars a week, and as these constitute as high a percentage as, perhaps, a half of the total number of anglers, their interests should plainly be considered.

The main reason for the introduction of the minnow seine license was to prevent, in so far as possible, the destruction of fish of immature varieties, it being held that the average angler was not sufficiently expert to distinguish between such and the true minnows. Undoubtedly this is the case, but, on the other hand, it is questionable whether the average licensee under the present system is any more competent. The centralizing of the capture of minnows, however, renders supervision by government officials comparatively easy, or at least is calculated to do so, so that the present system is plainly advantageous in that respect, but it is to be noted that no real effort has ever as yet been made to determine what proportion of young fishes of valuable species are likely to be caught among minnows where small lengths of seine net are employed. It cannot be denied that the present system entails hardship on many anglers, and, moreover, it is to be remembered that in many of the wilder districts, where it will not pay an individual to purchase a minnow seine license, there are none the less often a proportion of

anglers who, if they desire minnows, will practically be forced to break the law. It would appear, therefore, expedient to make some effort to ascertain what the extent of the danger to the young of valuable sporting and other fishes may be from the use of limited lengths of seine net for the purpose of catching bait; whether, in fact, that danger which was mainly responsible for the introduction of the present law is not more imaginary than real. To establish this beyond dispute it would be necessary to make extensive investigations throughout the Province. The fact that the majority of licensees maintain minnow pails would afford a means of determining the extent of the damage now being wrought, if the pails were to be examined by an expert ichthyologist, and, as the number of licenses is comparatively limited, it would plainly be possible for an expert not only to inspect a high proportion of them in the course of a few months, but at the same time to attend the actual seining operations and form a reliable opinion on the number of young and valuable fishes that are on the average liable to be thus secured. The Province is fortunate in numbering among its citizens an ichthyologist of the highest rank, Mr. C. W. Nash, and it would seem that the importance of the issue at stake would more than warrant the expense that would be incurred by securing his services to make a report on this question, which only an expert could ever properly decide. Should such an investigation be carried out and the danger to the immature of valuable species was found to be but slight, it is beyond dispute that it would be most advisable to amend the present law to the extent of permitting the individual angler the use of some feet of minnow seine net for the purpose of securing his own bait, and under such circumstances it would probably be found necessary to reduce the cost of the minnow seine license, used for commercial purposes, very considerably.

The Non-Resident Angler's License.

The non-resident angler's tax has proved of value from two points of view, firstly in producing a considerable direct revenue to the Province, and secondly as affording some index of the numbers of visitors to the Province from without who engage in angling and who may, therefore, be deemed to have been influenced in their decision to visit the Province on account of the sport to be obtained there. There would seem to be almost unanimity of opinion among the angler tourists that the tax is both just and reasonable provided only that the money thus collected is devoted to the purpose of conserving the sporting fisheries and thus providing them with good sport. The collection of the tax, however, still leaves much to be desired, for as noted in the Interim Report of this Commission there is no question that a number of non-residents do not at present pay, either because they are not approached by the official empowered to collect it, or because they remain in ignorance of the existence of the tax. The great majority of the visiting

anglers enter the Province by rail, and board at some hotel or lodging house for at least a portion of their time. A percentage of the $2.00 tax is at present paid to the official who collects it and in some districts forms no inconsiderable part of his income. If, however, the government officials received adequate remuneration, there could be no hardship in enlarging the numbers of those entitled to issue the licenses and collect the percentage, and, as the railways, hotels and boarding houses handle the bulk of the traffic, there would seem to be no possible objection to throwing open the issuance of the non-resident anglers licenses to them. In fact, it would appear highly advantageous to do so, for by this means undoubtedly a far higher percentage of visitors would pay the fee than at present, seeing that a far greater number of persons would be directly interested in its collection. Moreover, the railways, and the majority of hotel and boarding house proprietors, are financially trustworthy, and could be relied on to carry on the work under whatever system was adopted.

Gangs of Hooks.

In the proposed regulations affecting the international fisheries of the great lakes provision is made against the use of artificial baits with more than three hooks, or more than one burr of three hooks, attached thereto. At the present time the variety of artificial baits on the market is very great, and unfortunately there has developed a tendency in certain instances to furnish the lure with a great quantity of hooks or gangs of hooks. Lures thus equipped are plainly most destructive, for if the fish but approaches it is liable to be hooked in some portion of the body and in its struggles other hooks will almost certainly gain a hold. Such methods of angling cannot be deemed sporting, for not only do they almost annihilate the chances of the fish to escape once it has been hooked, but also tend to minimize the play which the fish can afford the angler. More especially is this the case with the smaller sporting fishes, such as the black bass and speckled trout, and even in angling for larger fishes such as the lake trout and mascalonge there can be no necessity for the employment of such deadly engines, for one large hook firmly embedded is, as a general rule, sufficient to land a fish, and in any event one gang of three hooks should be ample to accomplish this end even with fishes of the greatest weight and activity. It would seem, therefore, that throughout the waters of the Province no artificial bait should be permitted to be used which has more than three hooks, or to which is attached more than one gang of three hooks.

Recommendations.

Your Commissioner would, therefore, recommend:—

(1) That no commercial net fishing, or net fishing of any description other than minnow seining for bait purposes, be permitted in the

waters of the Province within five miles of any city or town, this provision, however, not to apply to the use of dip nets by anglers or to the removal of undesirable fishes by government officials.

(2) That the following areas be considered sporting fish reserves and that no commercial net fishing or net fishing other than minnow seining for bait purposes be permitted in them, this provision not to apply to the use of dip nets by anglers or to the removal of carp, suckers or other too prevalent coarse or predaceous fishes by Government officials or under direct governmental supervision:

The Rideau Lake System, the Bay of Quinte west of the bridge at Belleville and including Wellers Bay and Hay Bay; an area at the entrance to the St. Lawrence River bounded on the west by a line drawn from the south westerly extremity of Wolfe Island to the easterly extremity of Amherst Island and thence northerly to the western end of Collins Bay, and on the east by a line drawn from the eastern extremity of Amherst Island to the town of Gananoque; the Kawartha Lakes; Rondeau Bay and Long Point Bay in Lake Erie; Lake Simcoe; Muskoka Lakes; Lake Nipissing and French River; River Thames; Lake of the Woods within fifteen miles radius of Kenora; and the district in the Georgian Bay defined by the Dominion Government Georgian Bay Fisheries Commission and recommended by it for the purpose of a sporting fish reserve.

(3) That the artificial propagation of all classes of sporting fishes be undertaken by the Government; that of lake trout, pickerel, mascalonge and coarser fishes in conjunction with the commercial hatcheries already recommended; that of brook trout by the erection of a special hatchery on or in the vicinity of the Nipigon River and subsequently, if necessary, in other districts; and that of black bass by the institution of a system of bass breeding ponds at various points throughout the bass region.

(4) That the exact location for a brook trout hatchery or for a system of bass breeding ponds be determined by a duly qualified scientific icthyologist.

(5) That special attention be paid to the waters of the sporting fish reserves, above recommended, and of provincial forest reserves, in regard to assuring and maintaining an abundance of the best class of sporting fishes in them.

(6) That where a demand arises for the introduction into any of the Provincial waters of a fish, either indigenous to other portions of the Province or from without the Provincial borders, which has not hitherto inhabited the same, scientific examination of such waters be made to ascertain their suitability before any experimental plantations of the particular variety of fish is made; and that it be part of the duties of the Scientific Research Department, previously recommended to be established, to conduct such examinations, to supervise, where necessary, the experimental plantations, and to endeavour to

stock with suitable varieties of sporting fishes such waters in the accessible portions of the Province as are at present devoid of them.

(7) That steps be taken to secure the co-operation of the public press and of the railways in regard to the suppression of illustrations, photographs or narratives depicting the capture by individuals of more than the legal limit of any variety of fish.

(8) That steps be taken to secure an amendment to the present laws in relation to the numbers of black bass that may be caught in one day by one angler, and as to the disposal of black bass of less than legal size, to the end that it be declared legal when fishing with a fly or single hook to return uninjured fish to the water and to continue fishing until the legal limit has been killed; that bass less than legal size which have been injured in the process of catching or landing or subsequently by handling be retained by the angler and counted as fish in the total of his legal catch; and that the legal limit of catch for black bass be raised to ten fish.

(9) That especial care be taken in the speckled trout region to the north of Lake Superior, when timber limits are being leased, to maintain at least a fringe of trees along the banks of trout streams and rivers, sufficient to afford the shade necessary to the fish's existence and to prevent any undue raising of the temperature of the waters in summer months; and that, if possible, the regular waterflow of such streams and rivers be conserved by maintaining around their headwaters an adequate belt of forest.

(10) That a special patrol officer be appointed in the spring of 1911 whose sole duty shall consist of watching and inspecting the mouths and lower reaches of the rivers and streams entering the northern borders of Lake Superior with a view to checking the illegal netting at present being conducted in these waters, and that the said officer be provided with sufficient funds to enable him to hire what transportation he requires wheresoever he needs it in order efficiently to discharge his duties.

(11) That for the present no further plantations of rainbow trout or other imported trout be allowed to be made in the Canadian waters of Lake Superior or Georgian Bay or in the rivers and streams draining into them.

(12) That steps be taken to secure an amendment to the present regulations in regard to mascalonge fishing to the effect that hand trolling for this fish be prohibited and rod and line angling be enacted the only legal method of capture.

(13) That in all lakes of less area than 20 miles square the commercial exploitation of pickerel and lake trout be prevented in the future.

(14) That throughout the waters of the Province the use of any bait furnished with more than three hooks or one gang of three hooks be declared illegal.

(15) That the services of a competent scientific ichthyologist be secured to make an investigation during the angling season of 1911 as to the extent of damage, if any, wrought to the fisheries of the Province under the present system of minnow seine licenses by the capture of the immature of sporting or other valuable fishes, and as to the probable effect in this direction of permitting individual anglers the use of a few feet of minnow seine, and to render a report to the Government on these subjects.

(16) That the law in relation to the pollution of waters by factories and mills be most rigidly enforced throughout the Province and that steps be taken to have the penalty for deliberate violation of this provision raised to a sum of not less than $500.

(17) That the issuance of non-resident anglers' licenses be placed in the hands of transportation companies and reputable hotel and boarding house proprietors, in addition to the government overseers, and that the present percentage as paid to the government overseer be paid for each license to the issuer of the same.

(18) That steps be taken to secure from hotel and boarding house proprietors lists of non-resident and resident tourists visiting their houses each year, in order that reasonably accurate statistics of the extent of the tourist traffic may be secured.

THE PROVINCIAL FOREST RESERVES, GAME AND FUR-BEARING ANIMALS.

The Forests.

In discussing the problems connected with the Provincial Forest Reserves, the game and fur-bearing animals it is clearly impossible to avoid touching generally on the forests of the Province, for not only do these afford shelter to the bulk of the big game and much of the small game and fur-bearing animals, but also, as they are conterminous in many instances with the Provincial Parks, matters affecting them as a whole must exercise an equal influence over the adjoining Parks.

The great value of the forests is gaining yearly in recognition. The marked rise in the price of timber, the enormous and increasing demand for pulpwood to be manufactured into paper, and the threatened shortage of supplies in this direction in the United States, have all combined to call attention to the wonderful resources of Ontario, and to their actual intrinsic worth. The diminution in the waterflow of rivers and streams in those sections of the Province denuded of their forests has but helped to accentuate the lessons to be learned from the unfortunate experiences of Spain, France and China, that the even flow of rivers and streams is dependent to a very large extent on the

existence of forests about their headwaters; that the rainfall and climate are both materially affected by the removal of the forests; and that, as agriculture depends on the water supply, and agricultural exploitation of the land is the backbone of national prosperity, the conservation of the forests is of the most vital importance to the population at large. The rapid developments also in the utilization of waterpowers and the certainty that as fuel becomes scarcer waterpower will have to take its place for many purposes have undoubtedly very materially added to the importance of the forests which are, as it were, the custodians of the springs from which these waterpowers draw their sources.

While the wise general policy of the present administration of the Province in regard to the forests indicates clearly that these matters have received and are still receiving the careful and weighty consideration they deserve, it is none the less doubtful whether the general public has as yet become alive to their vast significance, both in the present and in regard to the near and distant future. It would seem, indeed, that the efforts of the Canadian Commission of Conservation and Canadian Forestry Association to this end might well be augmented by the publication and distribution of literature and general dissemination of knowledge on this subject broadcast throughout the Province at provincial expense, for so long as the general public remains ignorant of the vast values at stake, so long will it remain doubtful whether a sufficiency of funds will ever be provided to safeguard and ensure the perpetuation of the forests, whereas, when once the public had become fully seized of the economic functions of the forests in addition to their actual intrinsic value, it cannot be doubted that public demand would ensure the provision of ample funds for their proper conservation, exploitation and general management.

Forestry is an art of the highest order, and in view of the causes before mentioned, an art that is becoming yearly of greater importance. The fundamental basis of its teaching is that the forests, if properly administered, are not a fleeting but a permanent asset to the nation, and that to regard or treat them as anything else than permanent is the rankest of folly. Naturally, on a continent so abundantly furnished with magnificent forests as America, it took a considerable number of years for these basic truths to be received and acknowledged even by the administrations, but the laws of nature operate the same the world over, and that which wanton and extravagant wastefulness had taught the older nations of Europe years before came at last to be impressed on thinking people in America also. Fortunately the havoc wrought by improper methods of cutting and of administration of the timber resources has not as yet affected the vast bulk of the provincial timber areas. Of the 140,000,000 of acres comprising the total area of the Province there is still unsurveyed approximately 94,000,000 acres, and while 24,000,000 acres have been alienated by sales, locations, etc., there

still remains vested in the Crown 116,000,000 acres, much of which is covered with valuable timber. Under the wise policy of the present administration no township is thrown open to settlement without careful inspection by a competent official, and if such township is found to contain less than 40 per cent. of good land, it is withheld from settlement for the growing of timber, thus largely checking the evil, so prevalent at one time, of allowing people to take up rough land, ostensibly for farming purposes but actually for the value of the timber on it, the land being thus withdrawn from the operation of the timber license for all timber excepting pine, and consequently depreciating the value of a timber license in the district without compensatory benefit to the public, for, when the supposititious settler had removed the timber, he departed, leaving the land shorn of its trees and unimproved in other respects.

At the present time it is estimated that the timber resources of the Province attain a value of three or four hundred million dollars. This, of course, is merely a rough approximation, based on the material value of the woods on the market, and takes no account of the indirect value of the standing forests. Were these to be taken into consideration also, including the natural or economic irrigation of opened lands or of lands unopened, the actual or potential value of all waterpowers in the Province, the rainfall and the climate, it will be seen that the intrinsic worth of the forests to the Province would be a sum so gigantic as to be almost incalculable. So vital, indeed, is this asset that almost any expenditure would be warranted in order to perpetuate and preserve it.

Unfortunately the forests are not immune from dangers. Fires, disease and other scourges are liable to attack them. In addition to this, the growth to maturity of a tree is always a lengthy process; in the case, indeed, of many of the more valuable species occupying a period of time in excess of the average human span of life; so that if fire or disease is allowed to run unchecked, or if the cutting is carried to such excess that natural reseeding becomes impracticable, it is apparent not only how greatly the forest asset may be quickly impaired, but also that many years will be required to make good the damage effected even under the most favourable circumstances. It is apparent, therefore, that it cannot but be the part of wisdom to take sufficient precautions to reduce the risks of fire or other scourges to a minimum and to adopt such measures as will prevent excessive cutting.

The temptation to a licensee or owner of a timber limit to take the utmost profit in the shortest possible time without regard to the future is plainly great, and, indeed, in some countries such as Germany and Sweden it has in consequence been held better in the public interests that the State should administer and exploit the forests rather than risk their destruction or depletion through individual greed or incapacity. In a forest there will be found trees of all ages, and it is obvious that, no matter how long it may take trees to mature, if the percentage of cut is adjusted to the normal growth, an area of forest will

continue to yield at least an even production of timber, the value only varying as the market price rises or falls. Under scientific management, however, it has actually been proved feasible very materially to increase the annual production of a forest. In 1865 the average yield of 7,000,000 acres of Prussian forests was approximately 24 cubic feet, affording an average revenue of 72 cents per acre; in 1904 the average yield had been increased to 65 cubic feet, affording an average revenue of $2.50 per acre. Indeed, not only does the rate of production in Prussian forests appear to have been almost trebled in 75 years, but the quality, also, to have been improved, seeing that the proportion of saw lumber has increased from 19 per cent. to 54 per cent., while the yearly revenue from this source is now upwards of $17,000,000. Whether under any system by which timber limits are thrown open to public tender it will ever be possible to regulate the cut to achieve the result of taking only the normal increase, is doubtful, for naturally the licensee looks only to the profits to be derived from his venture and has no further personal interest in the forests after the expiration of his license. Indeed, so systematic and methodical must the cutting be to ensure only the proper amount being taken that it cannot be doubted but that, except in exceptional instances, the State, unaffected and unbiassed by considerations of personal gain, is alone capable of carrying such policy into effect. Moreover, it must be remembered that the adequate protection of the forests from fire and other scourges, and the proper regulation of the amounts to be cut, will under any system entail a considerable expenditure. The necessity for these precautions is now widely acknowledged, the only obstacle, in fact, being in most cases the wherewithal to put them into effect on a sufficiently great scale. Such expenditures are obviously but a reasonable insurance premium on a vast but destructible asset, and yet so long as the public is not fully seized of the national significance of the forests, so long will there be hesitation and diffidence in embarking on increased investments in this direction. At present the actual amount spent annually in the Province on this form of insurance is but a fraction of a mill of the material worth of the forests as wood, but a small fraction, indeed, of the yearly revenue derived from the forests, and it cannot be doubted that a far greater sum could with reason be allocated yearly for the study, care, management and protection of the provincial forests if they are to continue to exist and to afford a steady, indeed a constantly increasing, revenue to the Province.

Perhaps the solution of the difficulty is to be found in the principle of state exploitation of these resources on an increasing scale. The timber area of the Province is so vast that at present, at least, there would be no necessity to put an end to the existing policy of placing some of the timber limits under license to private individuals, but were the Government itself to undertake the exploitation of a proportion of its limits and gradually expand its enterprise in this direction, it can-

not be questioned that an annually materially increasing revenue would result, more than sufficient amply to provide for a forestry service adequate to the needs and worthy of the Province. That such a service is needed is beyond dispute. A vast field is open to scientific research and management throughout the forests, to the reforestration of burnt areas and to seeding or planting in sections barren of trees, and an equally vast field to the organization of a staff, not only capable of enforcing such laws and regulations as may be in force, but able, also, to cope successfully with disease and fire wheresoever they may occur.

Forest Fires.

Almost every year there has, unfortunately, to be recorded some material damage to the forests of the Province through the destructive agency of fires, and all too frequently there is chronicled in accompaniment the loss of other valuable property, occasionally, even, of human lives. The terrible forest fires which occurred in several of the western States of the Union during the summer of 1910 would alone have been sufficient to mark the year as disastrous in this respect and to have called widespread attention to the danger of allowing conflagrations of this nature to outstrip the possibilities of human control, but, as though this was not sufficient, the fires which had raged in the western portions of the Province and across the border in that vicinity intermittently throughout the summer months, suddenly sprang into renewed life in Minnesota in the early fall and, swept forward by a powerful wind, carried death and destruction before them right to the provincial borders, where in spite of the protection of the broad Rainy River men had to labour both day and night to save provincial habitations and enterprises from utter annihilation. The appalling suddenness of this holocaust and its proximity to the Province brought the disastrous nature of it closely home to the citizens of Ontario, and it cannot be doubted afforded an excellent object lesson of the inexpediency of penurious provision for the protection of the forests against fire.

To the average man, no doubt, the reading of the destruction of miles of standing forests conveys but little of its true significance. He can hardly appreciate the gigantic figures arrayed before him as to the square feet of timber burnt or the estimated value of the same in millions of dollars. He may, perhaps, be aghast at the loss of life or suffering and hardships endured by those who were fortunate enough to escape the flames. He may even dimly realize that these people have lost their homes, their possessions, their all. But the effects on nature are as a closed book to him. He has not seen; he cannot understand.

The stately forest, stretching unbroken for miles, harbours countless wild animals, birds and insects. Life, indeed, is seething in it. The soil on which it stands is nursed and enriched by its fallen foliage and trees, which in many instances cover even the bare rocks sufficiently

to allow of the seeds taking root right over them and which form always a natural basin where the rain drops may fall and accumulate, to percolate subsequently into the crevices of the rocks, from which again they will appear in the form of a gushing spring. Just as on the even outpouring of the spring will depend the flow of the brook, the stream and the river, so does the spring itself depend on the existence of its damp and mossy forest reservoir for its waters. The forest fire is capable of destroying all; animals, birds, insects, vegetation and soil. The voice of the forest is hushed, and the death of the trees is not only accompanied by the annihilation of one of nature's great water storages, so vital to the prosperity of some, perhaps far-distant, agricultural community, but by the disappearance of an important factor in the regulation of both climate and rainfall over a considerable region.

The picture of a forest destroyed by fire almost baffles description in its appalling horror. Unrelieved by the accustomed sounds, the cheerful note of songbirds, the chirruping of squirrels or chipmunks, the calls of animals or the humming of insects, deathly silence reigns oppressive and supreme. Great trees and small trees alike, black, bare and gaunt, stand shivering as the breeze soughs a mournful dirge through their ranks, ghastly skeletons of nature's once beautiful handiwork, or else lie prostrate on the ground, charred, burnt and shrivelled, grim spectres of a useful past, proclaiming the passage of ruthless death, the advent of desolation and decay. No butterfly or moth flutters over the withered and blackened leaves; no little creature or insect crawls from among them, startled by the approaching footfalls. Far down into the accumulation of twigs and decaying vegetation which has formed the forest bed, into the mossy and spongy soil which in the past has held water to furnish life to the trees growing on it, the relentless fire has eaten its way and left in its train a mass of useless cinder from which all nutriment has been utterly scorched. The human visitor to this tragic scene will have himself alone for company; will hear his own breathing; will be conscious of his own heartbeats; will be almost terrified at the sounds of his own footsteps; for life has been extinguished, the silence of the grave will surround him, and it will seem almost sacrilege to break the all-pervading quiet of the dead. In due course the action of the winds will blow away the cinders, and the bare rocks, over which once grew the forest, will be exposed to view in all their unbeautiful and grim nakedness, and the region will remain barren and in all probability useless to man's welfare until, perhaps, after the lapse of centuries nature once again shall have succeeded with indomitable patience in recovering the rocks with a fresh soil.

The extent of the havoc wrought by a forest fire depends in great measure, of course, on the conditions prevailing at the time of its occurrence, but generally speaking the greatest harm is effected during periods of prolonged drought, for then, not only are the trees and shrubs parched and their foliage likely to be withered and dry, but the debris

of the forest on the ground, the grass, the moss and the very soil are like so much tinder to the flames. So long as the soil is damp and full of moisture the damage done by fire will be confined to the standing trees and a certain amount of animal and insect life. Indeed, it is possible under such conditions for an area to be burnt over more than once and yet not suffer irreparable injury, for unless a high wind prevails at the time some trees will almost always escape with little or no damage, and if the withered trees are removed, which can be done to commercial advantage if undertaken promptly before decay sets in, reseeding will be accomplished naturally, for the soil will not have been seriously affected. Where, however, the soil is once destroyed, human agencies are powerless to replace it and the harm is in consequence irreparable. It is impossible to foretell the extent of the damage that a fire in any particular region will cause, for it depends so greatly on the condition of the forest at the time when the fire occurs, and similarly it is impossible to foresee the extent of a forest conflagration which has once got well under way, for it will depend chiefly on such matters as wind and rain which are altogether beyond human control.

The causes of fire are many and various, natural and human agencies both playing their parts in initiating them, but it is at least evident that, since the smallest beginning may result in untold damage over enormous areas if not promptly checked, the time has come when provision should be made to stamp out the fires wheresoever they occur in accessible portions of the Province before they shall have had time to gain leeway and spread, for once the fire has succeeded in covering a wide stretch of country and is being fanned by a wind, or has a hold of the soil, even with abundant help and ample appliances it is a matter of practical impossibility for man to check it. The sparks from the tree tops will fly through the air to the front and to the sides, igniting whatever they may chance to light upon; the flame in the soil will eat its way unperceived and underground for considerable distances, smoldering slowly so that perchance men may imagine that it has been extinguished, only to break out again at some fresh spot where a dry or withered root affords it an opportunity of bursting into flame. The only way, indeed, to deal satisfactorily with forest fires is to extinguish them at their birth, but to make arrangements to do so over so vast an area as that covered by the provincial forests cannot but be a great and expensive undertaking. There can, however, be no doubt that the value of the forests will warrant every effort that may be made in this direction.

As before noted the forest fires may be originated by human or natural agencies. The latter, however, is in all probability a comparatively rare occurrence. In the majority of cases man is directly responsible. Right through the heart of the forests he has carried roads, along which speed great engines of steel and iron, driven by steam, belching out sparks as they fly along. Other railroads are in course of construc-

tion and great gangs of men, a large percentage of whom are foreigners barely able to speak the language of the country and with little or no personal stake in it, are employed throughout the summer months, building them. All around them is forest. Fires are built for this purpose or that; tobacco in all its various forms is smoked; matches are continually being struck and carelessly thrown away; while the incipient fire resulting from any of these causes may easily pass unobserved or unchecked by those in authority who cannot be everywhere at once and have other important matters to attend to. On these construction lines, however, perhaps the most dangerous of all agents in the matter of fire is the "jumper," the man who not being over fond of work joins a camp for a few days and then betakes himself leisurely to the next along the right of way. These individuals are as a rule not only shiftless but careless. Walking along the right of way they smoke their cigarettes in enjoyment of the beautiful surroundings, tossing the ends aside into bracken with the utmost unconcern of possible eventualities, or else, wearying, perhaps, of the monotony of solitude, they build themselves a little smudge to keep off the flies while they sleep or to boil a pan of tea, and after thus refreshing themselves move on again, not thinking to stamp out the smudge, but leaving it to take care of itself. Then again prospectors are here, there and everywhere throughout the forests, lighting their camp fires and smudges, smoking their pipes, practically beyond supervision of government officials; the Indian is on the trail for one purpose or another, unconcerned and somewhat fatalistic as to consequences from fires left burning; the tourist and pleasure seeker, both citizen and visitor, all too frequently thoughtless in action, are in the woods in considerable numbers precisely at those periods of the year when conditions are most favourable for a forest conflagration; and finally, the dwellers in the forest, the settlers who have built their little homes therein, are not altogether beyond reproach in the matter of maintaining precautions against fire either when clearing land or when burning waste material. In addition it must also be recorded that, if dame rumor is not altogether at sea, there are certain individuals so debased and shameless that they will deliberately set fire to certain forest areas in order to force the hands of the government in the matter of throwing the limits open to the lumberman. Small wonder, then, when all these things are considered, that forest fires should occur yearly. Indeed, the only marvel would appear to be that they are not more frequent or more serious.

So great is the potential harm that may arise out of an inadvertent act or temporary carelessness in the woods that it would seem only just that wherever the origin of a forest fire can be traced to an individual, that individual should be made to suffer punishments and penalties commensurate at least with the damage wrought. There can seldom be any excuse for allowing a fire to start. If a man were to set fire to a government building or even to a building owned by some private

individual or corporation and his guilt were brought home to him, the offender would meet with but little leniency in the courts or sympathy from the public, and there is no apparent reason why any individual should be held guiltless or escape punishment who either maliciously or through wilful carelessness is the direct cause of the loss of thousands, perhaps millions, of dollars' worth of property to the public of the Province through setting fire to the forests. Indeed, it can hardly be doubted that a few instances of rigorous investigation and prompt, drastic punishment would tend to awaken those who go into the forests for one reason or another to the importance of and necessity for exercising the most unremitting vigilance and caution.

If the above conclusions are just in regard to individuals, plainly they must apply equally, if not with added force, to corporations such as the railways, to whom the public has granted most valuable privileges from which they derive very considerable profits. Unfortunately, it is only too certainly the case that by far the greater number of forest fires which have occurred in the Province of recent years must be attributed to the direct agency of the steam engine, and yet no effort is or has been made to obtain from the corporations adequate compensation for the damage effected through their operations. Along certain sections of the Canadian Pacific Railway between Sudbury and the provincial boundary the stumps of trees, black or grey as the fire was recent or remote, bear mute witness to the fiery devastation of the steam locomotive, and from Port Arthur to Rainy River, along the line of the Canadian Northern Railway, it is the same story repeated, great stretches of black and desolate burn. How far this destruction has been carried on either side of the rights of way will depend on the conditions prevailing at the times of the various and constantly occurring fires. In some localities it will be deeper; in some not penetrate so far into the interior; but in all cases the most casual observer cannot fail to note that considerable tracts of country on either side of the lines have been laid waste and rendered desert, unhabitable and unproductive. Through the heart of the forest country lying between Lake Superior and Hudson's Bay the Grand Trunk Pacific is now penetrating, while the Canadian Northern Railway is preparing to do so, and it is to be feared that unless most stringent and special precautions are taken a similar fate awaits these regions, and that the Province will suffer losses at the hands of these railways which could hardly be estimated in currency.

It has been estimated that in the region traversed by the Grand Trunk Pacific Railway alone there are 300,000,000 cords of wood suitable for making pulp and paper. The rivers of the region are numerous and large and the wood can be easily floated down to the vicinity of the railway, where, doubtless, under the wise provincial provision which enacts that all pine saw logs, spruce pulpwood and hemlock must be manufactured into lumber, pulp or paper in the Province, it will be so treated, thus opening up an enormous new area to settlement and

profitable commercial enterprise. It can be appreciated, then, what a calamity it will be to the Province if this magnificently wooded area is burnt and destroyed as have been other territories through which railways pass, by the very agency, in fact, employed to throw open their resources. Even though the cost be high, measures should plainly be taken to prevent any such eventuality, and it would seem but reasonable that in all cases the railways themselves should bear the main share of the burden, no matter what measures it may be deemed necessary to enact.

It is impossible to determine the value of the game inhabiting the forests of the Province, and it is impracticable, also, to determine accurately the loss in game sustained through any particular forest fire. Such evidence as there is to be had on the subject, however, would seem to point to the fact that it is considerable, doubtless, indeed, increasing in proportion to the extent of the fire and the velocity of its spread. All living creatures become alarmed at the approach of fire, and although the natural tendency is to escape from it by running or flying away in the opposite direction to which it is approaching, fear and smoke would appear to combine to confuse the wild creatures very much as they frequently do mankind under similar conditions, with the result that sooner or later, still fresh and untired, or else exhausted in their efforts to flee, they turn and rush into the very peril they are seeking to avoid and are destroyed. Birds and small animals, which have more or less fixed locations, probably suffer to greater extent than the larger animals such as the moose, caribou and deer, whose ranges are usually more considerable, but there would seem to be little doubt but that even these perish in numbers when the fire covers a considerable extent of territory and sweeps forward with inconceivable rapidity under the fanning of a high wind.

Great areas of forest land have been set aside by the administrations of the Province as public reserves or parks, to act amongst other considerations as a haven for wild creatures where they may breed and multiply in security, but the forest fire disregards imaginary boundaries in its advance and will as greedily devour a provincial forest or game reserve as any other section of the forest area, whether it starts from outside the reserve or within its borders. Small avail is it to afford the wild creatures security against man's depredations if they are to be driven from their haven by a forest fire or to perish in its flames. Indeed, all the main objectives sought to be obtained through the setting aside of these forest areas as reserves must fail to materialize where the forest fire has passed or raged unchecked. It is evident, therefore, that if it be wise to maintain these parks, and on this score there can be no two opinions, it must not only be the part of wisdom, but actually, indeed, imperative, to furnish them with a staff sufficiently well equipped to be able successfully to cope with any fires that may approach from outside or originate within them.

Methods of Checking Forest Fires.

The difficulty of checking a forest fire once it has obtained a good start and other conditions are favourable to its spread were well illustrated in the Rainy River District during the past year. The heat generated by a blaze of this nature is stupendous; the sparks, blown from the crowns of trees, will fly great distances on the wings of the wind and thus carry the fire forward with astonishing rapidity, and when the soil is sufficiently dry, the flames will eat their way into it and travel underground, to break out in some fresh spot and thus baffle the efforts of those attempting to extinguish them. In fact, the fire will sometimes smoulder for days in the ground, only very occasionally, if at all, bursting into flame, and though under these conditions it is not so alarming or so difficult to tackle, perhaps, as when the trees are blazing from trunks to crowns, it is none the less necessary to take measures to check its spread, for it will need but the rising of the wind to restore it to life and renewed activity. Indeed, as has been pointed out in a previous section, the desideratum on all occasions is to extinguish the fire as soon as it is discovered, no matter how insignificant or comparatively dormant it may appear, for the little incipient fire started by a cigarette end, a match, a smudge or a spark may easily develop into a conflagration entailing thousands of dollars' worth of damage. It is evident, therefore, that wherever a great number of catches of fire are to be expected in a forest area, the greatest efforts should be put forth to ensure these catches being extinguished before they have time or opportunity to spread.

There can be no question that the most fruitful of all sources of fire catches is the steam engine, for sparks and cinders are continually being emitted from the funnel to fall on either side of the right of way, and it is only too obvious how easily, when the vegetation and ground are dry, a blaze may result. There are in force certain regulations enjoining the railways to keep their rights of way clear of inflammable material and enforcing also the use of spark-arrestors, but even were these regulations carried out to the letter, which unfortunately would appear far from being the case in many instances, it is doubtful whether, as long as coal supplies the motive force of the engine, immunity from fire catches can either be expected or attained. This question has, indeed, come markedly to the fore of recent years in various of the States of the Union, and it would seem more than probable that the day is not far distant when many of the railways on this continent will be required to make use of some other material than coal when traversing forest belts. It would, in fact, appear that any additional expense incurred in fitting or building engines to consume some form of oil, and in the cost of the oil itself as fuel, could never even approach the sum total of the damage which is almost inevitably caused by the coal cinders and sparks, and for which compensation might

reasonably be claimed from the railways. Most especially would this apply where new lines are being cut through a virgin or almost untouched forest area, for there, with the forests still standing and unburnt, the conditions about the rights of way will be most favourable for the destructive agency of fire. The great bulk of the present forest resources of the Province are only now being pierced by railways and doubtless in the near future still other roads will be planned and constructed in these regions, so that it would appear that this question of fuel consumption by the railways might well receive the most earnest consideration of the provincial administration.

Even, however, where the engines consume coal a great deal can be done to lessen the risks of fire. There can plainly be no excuse for the railways failing to keep their rights of way clear of inflammable material or debris, or not complying with the regulations in regard to the use of spark-arrestors, and in view of the fact that these are wealthy corporations the penalty for any laxity or remissness in these directions should be punished with a fine sufficiently severe as to render any repetition of the offence unlikely. Government inspectors should be along and about the roads continually, and when any clearing is obviously needed and it is not promptly executed by the railway officials, it should be carried out under the direction of the government inspector and the expense charged to the railway company in addition to a commensurate fine. The question, indeed, of efficient patrolment of railways in operation is of no less, if not actually of greater, importance than that of railways under construction, for although undoubtedly the construction gangs on the latter require constant watching, the chances of fires being started by them and not extinguished promptly are not to be compared with those of a series of engines passing to and fro, by day and by night, vomiting forth a stream of cinders and sparks. The construction gangs in the forest areas receive close attention from the provincial authorities, but unfortunately the arrangements for the protection of the forests along rights of way of railways already in operation are far from effective, which fact is only too well evidenced by the scenes of desolation extending far and wide on either side of the Canadian Pacific and Canadian Northern railways in western Ontario.

All railways maintain section gangs at fixed intervals along their lines whose duty it is to patrol and inspect the line daily to insure its being in good repair. These parties as a rule travel on handcars of some description which can be halted and removed from the tracks wherever necessary. If some such system of patrolment for the purpose of extinguishing incipient fires could be inaugurated throughout the forest regions of the Province, there can be no doubt but that there would immediately ensue a great diminution in the number of forest fires. Nor would such a scheme appear to be impracticable. The lines through these forest areas are in the majority of instances single track and there is not an enormous press of traffic upon them. It would, of

course, be advisable that every train should be followed at a reasonable distance, but with gangs stationed at suitable distances and properly organized and instructed, this should not present an insuperable difficulty. The men would have to be furnished with a suitable equipment of spades, axes and buckets and these could be conveniently carried on the handcars, for no great amount of equipment is needed successfully to cope with fire catches in their initial stages.

An excellent illustration of the effectiveness of this plan is afforded by the De Lotbiniere limits in the Province of Quebec. Through many years the owners have caused every train during the dangerous season to be followed at an interval of about half an hour by a gang of men on a handcar provided with suitable equipment, and the result has been that while innumerable catches have been extinguished, the limit is still unburnt and under the careful and scientific direction of its proprietors is yielding as great a cut of timber to-day, with the exception of pine, as it was fifty years ago. It was recorded, indeed, by Mr. de Lotbiniere himself on one occasion as an illustration of the advantages of the system that in following one train through the comparatively short width of the limit, some 12 miles, one gang extinguished no less than 9 catches and incipient fires caused by its locomotive. When it is realized that each and every catch might have developed into a conflagration which would have destroyed the limit, it becomes apparent how intense is the danger to the forests from railway cinders and sparks and how vital and urgent is the necessity for devising some means of coping with this evil.

The expense of instituting fire patrols of this description along the railways throughout the forest area of the Province would undoubtedly be great, but it cannot be questioned that if even one great forest fire were thereby averted, it would not only be justified, but have paid for itself many times over. It is plainly wrong that the railways should be suffered to wreck and destroy millions of dollars' worth of public property. The forests belong, indeed, to the Crown and are, therefore, administered and cared for at the expense of the Province, but it would be without the bounds of reason to expect the Province to undertake expenditures to guard against the special risks to its property ensuant on railway operations, seeing that these corporations, no more than private individuals, have no right to cause injury to property which does not belong to them. An Act of the Ontario Legislature authorizes the placing of fire rangers along the railway lines and charging the expense of their maintenance to the companies concerned, and in 1909 the railways paid $66,712 on this account, chiefly, however, in connection with railways under construction, but it would seem that in so far as the railways in operation are concerned a more effective system, on the lines above indicated, is much to be desired, and although the operation of such a system would inevitably entail increased expenditures when the gigantic sums involved in railway construction and operation

are concerned, it is not to be credited that such comparatively trifling additional expenditure would materially affect the enterprises or act in any way as a deterrent to their initiation. As, however, these expenditures have not been demanded in the past, there would naturally enough be some protest from the lines at present in operation, but it must be remembered that the railroad development through the great bulk of the provincial forest area is only now commencing to emerge from its infancy, and that the issues at stake are truly vast. If some opposition will have to be encountered now to effect the introduction of such a measure, in twenty years time that opposition will have immeasurably increased, and if the opposition of to-day is allowed to prevail, the probabilities are that, meanwhile, great stretches of Ontario's fair and valuable forests will have been withered, shrivelled and destroyed, owing to the very largely preventible incendiarism of the steam engine.

It has been pointed out in another section that one of the chief causes of forest fires is the carelessness of prospectors, trappers, hunters, Indians and other individuals in the woods. Notices and warnings as to the regulations may be and are posted up in the forests; efforts may be and are made to hand personally to each individual entering or in the woods copies of the regulations, and to administer to each a verbal warning; but even the most careful man may make a slip, and it may safely be said that the bulk of those whose occupations lead them into the woods at some time or another will be careless in the matter of a match, lighted tobacco, or even, perhaps, the cooking fire. Evidently it is not possible closely to patrol the whole of the great forest areas of the Province, or even those sections into which some numbers of men penetrate, and consequently the individual himself has to be relied upon, but, nevertheless, there remains the great necessity of getting organized and intelligent effort to work on a fire before it has time to make much headway, if the forests are to be saved from burning.

In almost every region there are points from which a considerable view of the surrounding country can be obtained. In New York and other States it has been found highly effective to take advantage of such sites for the erection of fire lookouts. Where, perhaps, tree-tops impede the view, a rough tower of timber is constructed, and in any case a detail of men is kept on watch, furnished with a large scale and reliable map and with a good pair of field-glasses, and the station itself is connected by telephone with other stations and with the fire superintendent of the district, the men thus employed, from the superintendents down to the rangers, having no other duties or occupations than those of protecting the forests against fire. The advantages of such a system are apparent. Great tracts of territory can be observed, and after but little practice, with the aid of a good map and field-glasses, the lookout men can fairly accurately determine the location of any fire which breaks out. The whole system being in direct speaking connection with

the superintendents, he can issue his orders, make his dispositions and arrangements, receive reports and, where necessary, enroll additional assistance and despatch it to the scene of the fire. Two of the greatest difficulties encountered in dealing with forest areas are thus largely eliminated, observation and communication, and it goes without saying that an organization, numerically inferior, but equipped with means of observation and in constant communication with its chief, will be vastly more effective than one which, although greater in numbers, lacks cohesion and convenient direction. While some additional expense would be entailed in the adoption of such a scheme throughout the forest area of the Province, especially in the initial installation of the field telephones, it would not appear likely to be very considerable, for undoubtedly under such conditions a staff numerically less in proportion to the area patrolled than at present employed would be found sufficient efficiently to discharge the duties. It must be remembered that while already the Province is expending great sums annually on ranging the forests, these sums will be bound to increase very rapidly as further tracts of forest area are rendered accessible through the advent of new railroads, and, consequently, that an additional present expenditure which will tend to reduce the charges under this head in the future cannot but be fully justified. There can be no doubt but that in the Province the difficulties of observation and communication have played a large part in enhancing the destruction wrought by fire in the past. Rangers, by long days' journeys out of touch with their chief, have remained unconscious of fires starting and gathering leeway at, perhaps, no great distance from their camps, because, surrounded by forests and with no facilities for observation provided for them, they were unable to see, and then, when they became aware of the conflagration, it was already long past the power of two men to cope with, while the very distance to be travelled precluded the possibility of obtaining sufficient help in time. Although a pair of energetic men reaching a fire before it has attained great proportions can often extinguish it, or, at least, confine the extent of its spread, it would seem that, in many cases, where facilities for observation are not provided, and where the men are separated by long distances from their chief, as also from assistance, their presence in the woods as fire rangers, pure and simple, is almost, if not quite, useless. Means of observation and rapid communication are and ever will remain prime factors in the protection of the forests from fire, and it would indeed appear that the time has come when at whatever expense Ontario's fire ranging service should be equipped and organized in such a way as to facilitate the efficient discharge of its duties at all times and in all places under adequate direction and control.

Having regard to security of the forests from fires various States of the Union have enacted a measure requiring the lopping of branches from all timber felled. Except in seasons of prolonged drought the bed

of the forest will contain a considerable amount of moisture, which will tend to impede the progress of fire. Trees, branches and shrubs falling on to the moist bed soon become sodden and rapidly decay, whereas such timber as for one reason or another perishes but cannot reach the ground becomes hard, dry and brittle, in fact an easily inflammable material and excellent fuel to add strength to the flames. The less of this dried-up timber there is in a forest, the less will be the danger of fire gaining a firm hold, and there can be no question that the lopping of tops and branches not only accelerates the decay of the waste brush and timber, but inasmuch as this debris is laid out on the ground instead of being propped up, intertwined and entangled in an inextricable jumble, the fire, if it comes before decay has set in, will be less likely to flare up high, shoot sparks into the air and thus start crown fire, so that not only will it be easier to approach it but also to extinguish it, and in addition to this, the course of the rangers through the forests is not impeded by the continual encountering of great obstructions formed of the brush and debris remaining from timber which has been felled by the lumbermen. Most particularly would the lopping of tops and branches appear desirable in the lumbering of soft woods, for the waste of these decays more slowly than that of hardwoods, and, as a rule, more of it in proportion is left behind. The objection to the enactment of such a measure for general application throughout the forests of the Province would be the cost involved, but it would appear that in some forests experience has proved it to be actually inconsiderable, three cents per standard and ten cents per cord of pulpwood having been found in New York State, for instance, to be representative figures under normal circumstances. Against this increased cost it is claimed that a saving of wood is effected, and a saving, also, in guttering and skidding, and in illustration of these claims the following passage from the 15th Annual Report of the New York State Forest, Fish and Game Commission is quoted:—

"One operator, estimating the cost of lopping at 2½ cents, remarks that to offset this he was able to run a skidding crew about one man less to each team, and also occasionally got a log that otherwise would be left. The actual additional cost he did not think would be over 5 cents per thousand feet board measure. He believed that when four foot pulpwood was taken the cost of lopping would be entirely made up in the extra amount of wood he would get. In addition his forest was left in better condition than under the old plan, and he believes it decreases materially the danger of forest fires. A remarkable saving in connection with lopping was made by another operator who has been getting spruce for sawlogs, taking the timber out with what was considered good economy. He left the lopping until after the timber was removed and then went through, lopping the branches and taking the timber out of the tops for pulpwood. In this operation, with a force of eight men and a horse employed six days, ninety-seven cords of pulpwood were ob-

tained that would bring him $7.00 per cord delivered at the mill. This is an average of two cords per man, making a very profitable operation."

Finally, in favor of this measure it is further held that as the timber cut has to be lopped, greater care is taken not to fell trees which cannot be used, thus effecting a saving of small trees, and also that the brush spread out on the ground tends to retain the moisture during the process of decay and thus facilitate the germination of seeds which may fall upon it. It is to be noted, also, that in particularly dry or dangerous localities it would be feasible under such a regulation to require the lumbermen to pile and burn the brush without imposing on them any undue hardship, for in any case where heavy cutting is done it is necessary to clear the roadways of debris to draw the logs to the skidway, and where the lopping has been properly done, the material will be in good shape for handling and can be as easily piled as spread. The density of the undergrowth, however, and in fact the general nature of the forests, must materially affect the practicability of introducing such a measure, and while, therefore, the principle is undoubtedly well worthy of most earnest consideration, it must remain with the forestry experts to decide whether it is feasible to enact such a regulation to affect, at least, all future timber licenses in Ontario. There can be little doubt that if such a measure could be enforced, it would prove no small factor in checking the ravages of forest fires in the Province.

So rapid can be the development and so disastrous the effect of a forest fire on the public timber resources of the Province that some system should plainly be devised whereby not only should every male citizen, resident or visitor of mature years in the forest area, no matter what his occupation so be he is physically capable, be available at a moment's notice to proceed to the scene of a fire to assist in fighting it, but also responsible officials should be stationed at convenient and strategic points, able and fully empowered to call out such assistance as they may deem necessary. Where a settlement, village or even town is threatened, all its male inhabitants will naturally be perfectly willing to use their best endeavors to save it, but where the danger affects a community or locality at some little distance, their services are not so easily secured. To call for volunteers is almost invariably to court delay, and almost equally invariably to insure shortage of help, and the results of both these evils cannot but be a considerable augmentation of the damage effected. Where it was understood that each male citizen or resident was liable to this service, there could be no question of equivocation, and there can be little doubt but that the placing of the power to call on them to fulfil this obligation with responsibility and trustworthy citizens or officials throughout the forest regions would tend to the rapid extinguishment of many a fire that would otherwise be left to run its own course, provided only that it did not endanger a town or village. A small sum in the nature of a retaining fee might, perhaps, be paid to

private citizens undertaking this duty, and it would, of course, be understood that they themselves would accompany any parties which they deemed it necessity to send out. When, however, the occasion arose for action, each man of the party should receive a reasonable wage from the Province for each day of absence from his home, which expenditure would plainly be more than compensated by the saving of the public timber that would be effected by this means. It would obviously be necessary to select thoroughly reliable persons to exercise this authority, but it is not to be doubted that throughout the forest regions plenty of such are to be found. In addition to this, moreover, it would seem advisable that some equipment should be maintained at strategic points, ready for use in an emergency, for numbers of men are of little avail if the wherewithal with which to fight the fire is not in their possession. Such equipment, comprising spades, buckets, axes and, perhaps, dynamite, would entail but little cost to provide, but its presence at the required time and at the right place might easily be the means of averting a terrible disaster.

The Fire Ranging Service.

It has already been pointed out that there remains vested in the Crown an enormous acreage of forest lands in this Province, and that to protect this great asset the Province annually expends considerable sums of money. Some 20,000 odd miles are at present subject to license, and the custom arose of placing rangers on the land licensed, half the cost of whose maintenance was borne by the Crown and half by the licensee. In 1910, however, it was decided by the administration that in view of the increased value of stumpage and the small proportion that accrued to the Crown, the licensees might properly be assessed for the full cost of the maintenance of the fire rangers placed on their land, and a measure to this effect was introduced, and is still in force. In general the licensee is accorded the privilege of selecting his own ranger, it being deemed that, as a rule, he will be in position and sufficiently interested to select a properly qualified man for the purpose, but the right is maintained by the Crown of removing such appointees for incompetency or improper conduct and replacing them with others nominated directly by the Crown. Where the licensees do not apply to have rangers placed on their limits, a suitable man is selected by the Department for that purpose, placed on the limit, and the expense is duly charged to the licensee. In each district there is a supervising ranger whose duty it is to see that the rangers are on their proper beats and that the work is being properly carried out. Some 450 rangers are thus employed. In addition to this rangers to the number of some 200 are maintained to take care of the forest reserves, at a cost to the Crown of approximately $76,000, and further, along lines of railways in the forest areas, along rivers that are used as highways and in other ex-

posed regions some 200 rangers are placed on duty at a cost of approximately $80,000. The men are in general employed for five months, from the commencement of May until the end of September, only a very small number indeed being kept permanently on the staff, and these chiefly in connection with the public parks. Undoubtedly during the winter months the forests are immune from fire and the moisture in the early spring eliminates, as a rule, any very serious danger in this direction, but it is to be observed that under the present arrangements the forests are left practically without protection during October, during which month in many years the danger of forest fires on a considerable scale will have by no means disappeared, so that it would seem that at least a fair percentage of the men should be employed for some weeks longer than at present, so long, at least, as the present system continues in force, for the money spent during the five preceding months in forest protection will have practically been spent in vain if large areas of valuable timber are destroyed after the rangers have left their beats.

It cannot be doubted that with so vast an acreage of public forests it would be economically sound to maintain a considerable permanent staff of foresters, sufficiently well educated and seized of forest lore to be able under scientific direction to look after the well-being of the forests throughout the year, in addition to undertaking fire ranging duties during the summer months. Such a corps could be augmented to the required extent during the dangerous seasons, but by this means there would, at least, always be on the ground a fair percentage of rangers not only thoroughly acquainted with their beats, the most dangerous localities and the quickest and easiest routes to any given point, but versed and efficient in their duties of proved energy and discretion and with a more or less personal interest in the particular tract of forest over which they ranged. The presence, also, of such a corps in the event of fire could not but be most advantageous, for the measures necessary to extinguish it require to be co-ordinate and discharged under disciplined direction. Under the present system co-ordination is sadly lacking; co-operation, as has been pointed out before, frequently impossible; and discipline and direction, in the past at least, but all too frequently non-existent. There would undoubtedly be no difficulty in filling the ranks of a permanent provincial forestry corps with suitable men, for not only is the life attractive and interesting to many, but unquestionably the creation of such a service would result in the broadening of the present educational facilities in the Province to fit men for these posts, and in view of the experience of other and older countries in the economic administration and exploitation of forests, the sooner such a service is inaugurated in Ontario, the better it will be in regard to the permanent interests of the public demesne.

Perhaps the chief failing of the provincial fire ranging service in the past has been its inability to place trustworthy physically and mentally capable men on the various beats. Unfortunately the duties in many

cases were not regarded seriously by either the incumbents of the office or their immediate superiors, and this position of moral responsibility degenerated into a holiday vacation or pleasant and comparatively profitable period of leisure at the expense of the public treasury. Applications for the posts were numerous by various classes of men desirous of passing some months in the woods with the incidental opportunity of making a little money, and personal or party influence was all too frequently paramount in securing the nominations, with the results that attendance on the beats was often irregular, appointees entered on or abandoned their duties late or early by several weeks as the case might be, and men were styled and drew pay as fire rangers who were both mentally incapable of appreciating their responsibilities and physically of discharging them, or else, by fault of their youth or inexperience in woodcraft, canoe handling and fire fighting, absolutely inefficient and useless. Days and weeks were passed in angling, canoeing, bathing and other pleasant pursuits; firearms were carried and discharged indiscriminately to the destruction of small birds, animals and, it is to be feared, of game generally; and, like Nero in his palace, the ranger would sit making music in his tent while some portion of his charge blazed merrily and was consumed and destroyed by fire. Fortunately these matters have come to be fully appreciated by the present Minister in charge of the Department, and under his wise direction most stringent measures have been and are still being devised and enacted to remedy this unsatisfactory state of affairs. Only recently fresh endeavors in this direction were announced in the public press, and it is satisfactory to note that in the approaching fire ranging season the carrying of firearms by rangers will be absolutely forbidden, and the men not only compelled to be on their beats for the periods for which they are engaged, but have work allotted to them sufficient to keep them busily employed. That the ranger drawing good pay from the Government should be allowed to rest at ease so long as there is no fire is plainly an absurdity, for in the forest there will always be more work than can be done in clearing pathways and portages, lopping and burning debris, improving the portage landings, making channels for canoes in shallow rapids and an infinity of other occupations tending not only to facilitate easy and rapid progress through the woods, but inasmuch as they do this and also remove a considerable amount of inflammable material, to the lessening of fire risks also. In fact such duties are the obvious routine work of an efficient ranger, for unless they have been conscientiously discharged, his most energetic efforts in the case of fire breaking out will, in all probability, be of but little avail. There will, however, under the present system always remain the difficulty of ascertaining how far a man applying for the post of ranger possesses the necessary qualifications.

A good proportion of the posts have in the past been filled by students and other young men from the towns, and while this no doubt will

continue to be the case, it is not to be expected that a high percentage of them will have much knowledge of fire fighting, woodcraft or canoe handling, so that, although if the regulations are stringent, the system of supervision improved and better organized and their duties thoroughly explained to them, doubtless the majority of these men could be counted on to use their best endeavors faithfully to discharge their responsibilities, there would still remain great areas of forest under the care of men so inexperienced as to render their work of but small value. The fires, as a rule, are not to be expected during the early weeks of the fire ranging season, so that these inexperienced men have some opportunity of becoming used to their surroundings, but it is none the less an indisputable fact that it takes more than a few weeks, even than a few months, to initiate a novice into the mysteries of woodcraft and canoe handling and to transform him into an efficient ranger. If a permanent forestry corps was established, as previously suggested, the breaking in of novices to the work would be greatly facilitated and much of the dangers from incompetency and inexperience largely eliminated, but even under the present system it should be possible to take some measures to bring about these results.

The rangers, as a rule, work in pairs and there are, in all probability, always available a sufficiency of applicants for the posts to furnish fifty per cent. of the required number who not only have had considerable experience in the woods, but have actually discharged the duties of fire ranger on some previous occasion. If a register were kept of the names of men who have filled these positions, with a record of their qualifications and of the way their duties had been discharged, it would seem that in all cases it should be possible to have one, at least, of a pair of rangers experienced and efficient, and if it were so ordered that this man was given authority to arrange for the discharge of the duties of the post by the pair and made responsible for it, there can be little doubt that material benefit would accrue. It might, perhaps, be necessary to distinguish between experienced and inexperienced men in the matter of pay, and, in fact, some such steps would appear not only reasonable but fair, but at all events the inauguration of such a system would at least have the merits of preventing two young and inexperienced students being placed together on a beat to while away the time in unprofitable idleness, and of more or less preventing the chumming of two experienced but lazy lumber-jacks on some beat as a means of passing the summer months. The responsibilities of the posts are serious, and, although undoubtedly the pleasure of the outing would be spoiled to many if they were unable to select their partner or be assured that he would, at least, be of the same station in life as themselves, the matter is altogether too grave to allow of such trifling considerations carrying any weight. Indeed, fire ranging is and should be regarded as a business undertaking, and the fact that this is the view of the Department on the subject should be most clearly impressed not only on the superinten-

The Mosquito Bar, in Common Use by Rangers and Others in the Woods.

dents and chief rangers, but also on all applicants for and appointees to the position of ranger.

Practically all the big game and no small proportion of the small game of the Province is to be found in the forest regions, and in addition to this the angling in these districts is often first class. There can be no question that at the present time neither the game nor the fishery laws of the Province are very well observed in the wilder regions, and the difficulties attendant on their proper enforcement in these districts are too obvious to need recapitulation. The inland fisheries, both sporting and commercial, the game of all descriptions, and the fur-bearing animals to be found in the forest areas unquestionably constitute a very great asset which it is of the utmost importance to conserve, and it is plainly expedient that to this end every government official, whose duties lie in the woods, should be an active agent in their protection. At the present time the fire rangers are, indeed, supposed to enforce the game laws and fishery regulations, but it is to be noted that these laws and regulations are numerous and complex, that it is not to be expected that a novice in the woods shall have leisure and time to master them thoroughly, and that in all too many instances, even though the ranger detects an infraction of the law, he has little or no facility for bringing home the offence to the offender. Trapping and shooting through the close seasons and the netting or dynamiting of streams are all calculated materially to impair the resources of the Province in fish, game and fur-bearing animals, and yet all these operations occur and recur throughout the forests, if, perhaps, not quite so much during the fire ranging season, at least with considerable frequency both prior to it and after its close. Such a state of affairs is plainly to be deplored, for in addition to the obvious evil of allowing the laws to be set at naught and treated with contempt, these resources are far from being inexhaustible, and it is lamentable that the greed or slaughter lust of a few individuals should be allowed to perhaps ruin them irretrievably. In the interests, therefore, of economy in the protection of game it must be apparent how great a factor would be a permanent forestry corps, thoroughly acquainted with the forests, equipped with the means of observation and communication, and versed not only in the forestry regulations, but in those appertaining to the fisheries and game also. In fact, the institution of such a corps, when inter-departmental co-operation had been thoroughly attained, would in large measure obviate the necessity of maintaining great numbers of game and fishery overseers in these districts, and seeing that if the game, fisheries and fur-bearing animals of these regions are to be conserved greater expenditures on the service to protect them are quite inevitable, it is plain that a saving would be effected if this additional expenditure could, in part at least, be merged in that necessary to secure the adequate protection of the forests. Under the present system a copy of the game laws should be in the possession of every ranger, and it should be explained to him that the enforcement

of these laws is one of his duties, and that it behooves him, therefore, to become intimately acquainted with them. Parsimony in the matter of literature of this nature is obviously ridiculous, for it is evidently absurd to inform a man that he is supposed to enforce regulations when, as at present all too frequently, he has no means of ascertaining what those regulations are. It would, indeed, seem preferable that every ranger should be supplied with a number of copies of the game laws and fishery regulations on the chance of being able to distribute them to prospecting and other parties in the woods, together with the fire and forestry regulations with which he is now supplied for that purpose, rather than that he should find himself in the position of not even possessing one copy for his own education and guidance.

Recommendations.

Your Commissioner would, therefore, recommend:

(1) That for the purpose of scientific regulation and care, and for the better protection of the forests, a provincial forestry corps be established without delay.

(2) That steps be taken to ascertain whether it is practicable for railways operating through forest regions to burn some other material than coal which will be less dangerous in the direction of causing forest fires, and, if feasible, to compel the railway companies operating through the forest regions of the Province to do so.

(3) That stricter attention be paid to the enforcement of the regulations in regard to the use of spark-arrestors and to the keeping clear of the rights of way by railways, and that the penalties for non-compliance with these regulations in the Province be raised sufficiently to render them of material importance to these corporations.

(4) That where the origin of a fire can be traced to the operations of a railway company, the company responsible be assessed for the full estimated value of the damage to public timber lands effected.

(5) That during the dangerous seasons for fire the railways be required to maintain fire patrols throughout such sections of forest belts as they traverse, furnished with handcars and adequate equipment, to follow up the various trains passing over their lines for the purpose of extinguishing catches and incipient fires.

(6) That steps be taken to secure the better patrolment of the rights of way of railways in operation in forest areas by government officers.

(7) That wilful carelessness in regard to the starting of forest fires in the public forests of the Province by any individual whatsoever be made an indictable offence, punishable with severe penalties, and that where the origin of a fire can be traced to the wilful carelessness or neglect of any individual, such person be punished by fine and imprisonment commensurate with the extent of the damage done to public property through his instrumentality.

An Alligator in the Rainy River District.

A Log Boom, Rainy River.

(8) That a system of lookout stations be gradually introduced throughout the public forests of the Province; that each such station be supplied with a large scale map of the surrounding region, a pair of field-glasses and, if necessary, an instrument for determining distances; that use be made of field telephones for inter-communication between such stations, and between such stations and the chief fire or forest officer of the district, in order to facilitate rapid concentration and control; and that a system of lookout stations and field telephones be instituted in the Provincial Forest Reserves without delay.

(9) That Crown timber agents, magistrates and other responsible officials or private citizens throughout the forest areas of the Province in towns, villages or settlements, be made Fire Officers; and that power be vested in them to call on each and every male citizen of the Province, or resident or visitor in their locality of mature years to proceed to any point designated by them for the purpose of fighting forest fire, and that such officers be paid a small annual retaining fee.

(10) That where a fire officer calls on citizens or others to perform this duty he be required to accompany and control the force, and that reasonable compensation for each day of absence from home, or while such services are being rendered be paid at the public expense to each and every individual so employed, including the fire officer.

(11) That in each town, village or settlement, or locality where a fire officer is appointed, a reasonable amount of equipment, suitable for fighting fire, be maintained by the government under the care of the fire officer.

(12) That a system be introduced whereby not only shall a record of the services of each fire ranger employed by the government be kept, but in so far as possible the placing of two inexperienced or untried men together on one beat shall be prevented, and whereby the experienced man of satisfactory previous service shall be placed in charge of the party of two, where the rangers work in pairs, and receive some slight additional remuneration.

(13) That each fire ranger employed by the government be instructed that part of his duties is to keep portages and channels clear, improve access to portages, lop branches, remove inflammable wood, and such other matters as will tend to improve communications and fire fighting facilities throughout his beat, and that steps be taken to see that such duties are adequately performed.

(14) That each fire ranger employed by the government be supplied with copies of the game laws and fishery regulations for distribution to those whom he may encounter on his beat; be required to make himself acquainted with these laws and regulations and be instructed as to his duties in regard to their enforcement.

The Provincial Forest Reserves.

So well has the advisability of conserving the valuable pine resources of the Province been appreciated in Ontario that at the present

time some 20,000 square miles on which considerable belts of pine, estimated at about nine billion feet and valued at some $90,000,000, exist, have been removed from settlement and declared forest reserves, and by this means, also, not only has it been in certain instances possible to provide a haven for wild creatures and birds from the hunter, but also to safeguard the headwaters of many important rivers and streams. The areas of the principal reserves and the headwaters of the chief rivers occurring in them are approximately as follows:

Reserve.	Area.	Rivers.
Temagami Forest Reserve	5,900	Montreal, Malabitchuan, Sturgeon, Vermilion, Wanapitei, Onaping, Frederick House and Mattagami.
Mississagi Forest Reserve	3,000	Mississagi, Wenebegon, White, Sauble, and branches of the Spanish.
Nipigon Forest Reserve	7,300	Nipigon, Black Sturgeon, Gull, Poshkokagan, Pikitigushi, Onaman, Mamewaminikan, Sturgeon and Wabinosh.
Quetico Forest Reserve	1,560	Rainy River and tributaries, Maligne, Sturgeon and Quetico.
Algonquin National Park	1,930	Petawawa, Madawaska, Muskoka, Amable du Fond, South, and Maganetawan.

In the Interim Report of this Commission attention was called to the great potential value of these reserves in regard to the game resources of the Province, and it is not to be doubted that as the years roll on and the wilder and remoter portions of the Province are opened up this fact will become more widely recognized and appreciated. At the present time the Algonquin National Park is the only actual game reserve of the Province, being, in fact, a game reserve and not a forest reserve, but in the past at least a measure of protection would seem to have been afforded the game in most of the reserves owing to the fact that the carrying of firearms therein has been discouraged, and it would appear to require but the passing of an Order-in-Council to render the carrying of firearms in all reserves illegal. It is sincerely to be hoped not only that such action will be taken without delay, but also that all the provincial forest reserves will be declared game reserves in the strictest sense, to include all varieties of game and fur-bearing animals, and, further, that this feature will be introduced at the time of the creation of any new forest reserves in the future. The importance to the Province, indeed, of the policy of forest reserves is so vast and far-reaching in its effects from so many points of view besides that of game that it is to be hoped that further additions to the provincial reserves will be made in the north country into which the railways are now penetrating.

In a previous section it has been noted that the placing of a forest area under reserve does not remove from it the danger of fire, and that where fire succeeds in penetrating into a reserve much of the material and potential value of it is destroyed. Valuable timber will be consumed

Ranger's Hut in the Algonquin National Park.

and the headwaters of rivers and streams deprived of their protection; the beauty of the scenery will be ruined and the attraction to citizens and visitors to take advantage of the reserve will by so much be diminished; game, both big and small, birds, fur-bearing animals and other creatures will be driven from the locality even if not actually perishing in large numbers; and the damage done in these directions is in large measure irreparable for many and many generations. It is plain, therefore, that too great precautions can hardly be taken to prevent such a calamity. The safety of the reserves against fire, however, cannot be secured without considerable expenditure and enterprise. At present permanent staffs are maintained in some of the reserves, while in others rangers are only sent in during the dangerous seasons for fire, but in no case has any provision been made for rapid communication or concentration, and in almost every case, even were these indispensable adjuncts of efficient fire ranging present, the staffs would still be undermanned. In addition, also, to the problem of fire protection it must be observed that where no rangers are in a reserve for seven months of the year, it is not to be disputed that advantage will be taken of the circumstance to the detriment of the game and fur-bearing animals in it. There can be no question but that it is most desirable that all provincial forest reserves should be game reserves also, and, if it is worth while setting aside reserves for the purpose of fulfilling certain definite functions, it must be equally worth while to insure in so far as possible that neither fire nor man shall interfere with their so doing. If, then, the solution of the problem of adequate protection and ranging of all the provincial forest reserves and game reserves, and equipping them generally to meet all probable contingencies, is dependent on the provision of funds, which in all probability it is, seeing that the present chief of the Department is so well seized of the importance of this question, the matter would appear to resolve itself into determining some method or means whereby the work performed by the rangers can be made to produce an income sufficient to cover at least a considerable proportion of their wages, or, in other words, to render the reserves a producing asset in regard to revenue, in addition to being an efficacious but silent and non-producing factor in the general policy of conservation.

One method of so doing was suggested in the Interim Report of this Commission, and has already been adopted in the Algonquin National Park, namely, the taking of beaver by the ranging staff under the direction of the superintendent and selling the pelts for the benefit of the public treasury. It would seem that the basic idea contained in this scheme might well be extended. The forest reserves are maintained for the benefit of the community of the Province and at public expense, so that the fullest value of any possible products of these reserves should plainly be secured to the public. It cannot be doubted that in all the large forest reserves of the Province there are a great number of valuable fur-bearing animals of various descriptions, and under an efficient

system of protection all the year round it would appear morally certain that these creatures would increase and multiply very rapidly, to the extent, even, of becoming too numerous. In the natural course of events they would spread over the surrounding country to add grist to the mill of the individual trappers in those localities, and it would seem that the additional profit which would thus accrue to private individuals through the existence of the reserves might well, in part at least, be diverted into the public treasury which is bearing the burden of the protection of the reserves. The price of fur of almost every description continues to rise, and if competent men were placed in the reserves to supervise the work and determine the numbers of each variety of animal that could be caught and removed without detriment to, if not actually to the advantage of, the reserves, there can be little question that with so great an area as 20,000 square miles at its disposal, which area, be it noted, may reasonably be expected to become augmented in the future, the government would experience little difficulty in securing a sufficiency of pelts annually to provide through their sale funds sufficient at least to cover a high percentage of the cost of adequately ranging and equipping the reserves, if not actually to produce a surplus income.

At the present time it would seem to be the case that considerable quantities of fur are secured by Indians and other individuals in some of the reserves, particularly so in the case of the Quetico Forest Reserve where the fur-bearing animals are comparatively abundant in certain localities and no rangers are provided during seven months of the year, while the reserve itself has not been declared a game reserve, and it is apparent that the sums of money now acquired by the individuals who now engage in this occupation not only could be far more profitably and serviceably utilized in perfecting the arrangements for the protection of the reserves, and in the maintenance of adequate staffs in them, but would go a long way in rendering these matters feasible of accomplishment without adding to the burden of the public treasury.

Attention has been called to the fact that there is ample work for the fire rangers in the forests at all times, irrespective of whether there is immediate danger of fire. Particularly so is this the case in the forest reserves, for as these can reasonably be expected to be visited by at least some citizens and visitors from outside, an additional cause is provided for keeping the portages clear, rendering access to them easy, and generally making conditions as pleasant as possible. There can be little doubt but that as the country opens up the reserves will attract increasing numbers of visitors to them, for forest scenery is always fascinating to the townsman and a vacation to the wilds an attractive proposition to many. In the Interim Report of this Commission the question of establishing a registration fee for visitors to the reserve was discussed, and it would seem that such a measure would be useful both in providing an increasing revenue and in affording statistics of the extent of the tourist traffic in the reserves, but in any case it is plain that as the reserves are

the property of the public, citizens of the Province visiting them may justly expect to find conditions in them reasonably comfortable for travelling. The work already indicated, if properly carried out, would go a long way towards effecting this, and at the same time would be acting in the direction of preventing the risks of fire and facilitating the means of coping with it should it occur. In addition to such work it would seem that the rangers in a provincial forest reserve might also be required to clear and prepare a number of camping places at suitable points and maintain the same in good order, ready for use by whomsoever chances to pass, for there is nothing that the casual visitor to the forest, tired and weary after the unaccustomed exercise of a long day's canoeing and portaging, will appreciate more than to find a well-chosen and clean camping ground awaiting his occupation, with the tent poles all ready to hand and other facilities and conveniences perhaps also provided. Springs occurring along the portages and other paths likely to be frequented should be cleaned, built around with some form of rough guard, and furnished with a drinking vessel, and notices might well, also, be put in conspicuous places, as is done in some of the reserves in the United States, indicating the direction and distances of prepared camping grounds. In carrying out all these various tasks, not only would the ranger be kept busily employed and in hard enough condition to cope with any emergency that might arise, but in so doing he would, also, inevitably become more intimately acquainted with his beat, all of which could not but tend to his increased efficiency.

In all reserves it would seem that, whatever the dimensions of the permanent staff, there should always at least be a superintendent living on it all the year round, so that he may become well acquainted with the whole of the district and the conditions prevailing in it and in the surrounding country, and thus be in a position intelligently to direct the work of his rangers, to take advantage of the natural features of the locality in preventing the incursion of fire from outside or in dealing with it should it occur inside, and to take measures to prevent trespasses of every nature at all times of the year. All these matters plainly require study, preparation and knowledge of the district, and it is not to be expected that men appointed for a few months of, perhaps, one year only, should either have the inclination or the interest to delve deeply into them.

It would seem, also, that in those reserves where the tourist or other traffic has already reached goodly proportions and where, in consequence, the presence of the superintendent at headquarters is necessary for prolonged periods, a chief ranger should be provided to act under the orders of the superintendent, and to be continuously on the move to see that the rangers are on their beats and conscientiously discharging their duties. The need for supervision of the rangers is quite apparent, and it is equally plain that over the great stretches of forest country which constitute the reserves the time of one man would be fully occupied in each

reserve visiting the various beats and inspecting the work done. A superintendent chained to his headquarters for days at a time could never satisfactorily discharge this most important duty.

Further, it would appear that in the interests of systematic administration and co-ordination of the arrangements in the different reserves the time is approaching, if indeed it has not come, when an official should be appointed exclusively to supervise the provincial forest reserves. A great many improvements will most certainly have to be carried out in these reserves; a great deal of work will always be on hand in them; and just as there will always be the necessity of supervising the rangers on their respective beats, so also would it appear indispensable that each reserve should be more or less frequently visited by a responsible official to insure that the instructions and wishes of the Department are being carried into actual effect. It is impossible to reduce to writing in a few brief orders the perfection of organization and arrangement in all its detail which it may be desired to produce, and the interpretation of such orders on the subject as are issued will almost invariably be construed in different ways by different persons. It is plainly impossible for the Minister of Lands, Forests and Mines to devote sufficient of his time to attend personally to the carrying out of the full detail of his plans in regard to all the provincial reserves, and it must appear, therefore, that he should have to his hand an instrument for insuring that his instructions in this regard are being carried out in the manner he intends. That there is ample work to keep such an official busy throughout the year is evident, and it can hardly be doubted that the provincial reserves would benefit greatly were such an appointment made, for not only would it tend to prevent the lack of interest or control on the part of the superintendents and their staffs, but it would mean, also, that sound and effective organization would be introduced into one and all of them, and such improvements and devices as were found to be effective in one reserve could promptly be introduced into the others also. If the suggestion, previously made in this section, of utilizing the fur resources of the reserves as a means of obtaining revenue were carried into effect, it would afford an additional reason for the creation of such a post and enhance its importance, for undoubtedly the sums involved would soon attain considerable proportions and the necessity for close supervision of the catch and the collection and disposal of the pelts would become imperative. It is, moreover, beyond doubt that at the present time not only are the public, to a great extent, ignorant of the attractions of the various provincial reserves and the facilities afforded in them, but that in several of them there yet remains much to be learned by the authorities. A permanent official, occupied exclusively with the care of the reserves, could be expected to collect and collate all useful information on the subject, so that the same might be published by the government in handy form for public information. There can be little question that if the scenic, canoeing, angling and camping facilities of

the reserves were better known, a considerably greater number of citizens and visitors would visit them annually, and as these reserves are in one sense public parks, retained for that purpose, it would seem advisable that full information concerning them should be available to the public. The work, therefore, in this direction of such an official as suggested would be most useful.

As the number of visitors to the reserves increases there will almost inevitably arise a demand for guides to conduct parties through them, and, as in the case of the Algonquin National Park, a supply of guides will appear to meet the demand. The fire rangers in a reserve and for the matter of that the fire rangers throughout the forests can be expected to be particularly careful in the matter of starting forest fires, and, indeed, the penalties for the slightest carelessness on their part in this direction should be most severe, but in the reserves, at least, it should be enacted not only that the licensed guide is responsible for every precaution being taken by his party, but also that any carelessness on his part in this respect, which is detected, will be visited by the immediate cancellation of his license, no matter where he may be or how inconvenient the same may prove to his party, and that the cancellation of a license on these grounds will bar the licensee from ever obtaining another one. Camp fires left unextinguished are a most fruitful source of danger, and yet, although this is a well-known fact and the offence is altogether inexcusable, it all too frequently happens that fires are not properly put out before a camping ground is abandoned. The tourist, also, is prone to be light-hearted in the woods and inconsiderate of the dangers of fire, and this spirit of levity is apt on occasions to communicate itself to the guides. It should, therefore, in all cases be most clearly impressed on the guides that any remissness on their part will not be tolerated, but will be punished by the full penalties, and that it is a chief feature of their duties to warn the persons by whom they are engaged against recklessness in this matter and rigidly to check any tendency to, or display of, carelessness in this respect.

The general carrying of firearms in the reserves may, it appears, shortly be forbidden, and from the reports recently published in the public press it would appear that in the future this same wise provision will be made applicable to rangers also. An idea would seem to be prevalent amongst the public that a firearm is an indispensable part of the equipment necessary for a stay in the wilds as a protection against the wolf. In most of the provincial reserves no doubt wolves do exist, and this is naturally to be expected, for all wild creatures, such as the deer, will quickly discover regions where they are afforded even comparative immunity against the hunter, and where the deer congregate, there also, will appear the wolf. The presence of wolves in the reserves is to be regretted on account of the numbers of deer which they destroy, but, although their voracity and destructiveness in regard to deer is stupendous, it cannot be claimed for the Ontario wolves either that they are

partial to human flesh or that they are prone to attack human beings. In fact, the most careful investigation tends only to accentuate what an arrant coward is the wolf of the Province in the neighborhood of a human being. The howling of wolves, or a glimpse of one or two of them, is apt occasionally to frighten the nervous, with the result that wild stories have been circulated of men having been treed for hours by wolves, and having only escaped after prolonged periods of suspense and terror, but as a matter of fact no single instance has as yet, it would appear, been authenticated of a grown man or woman being attacked, much less killed, by wolves in the woods of Ontario. Thousands of instances on the contrary can readily be adduced proving the absolute security of human beings in this regard, and it would seem, therefore, that this erroneous plea for the carrying of firearms in the reserves has been rightly disregarded.

There are, however, timber prospecting and other concessions issued in certain of the reserves which involve the presence in the reserves of parties or gangs of men, and there are, also, in certain instances individuals desirous of crossing the reserves for the purpose of reaching the country beyond them, while outside of the reserves the carrying of firearms is not, of course, illegal at the present time. The possession of firearms in lumber and other camps is always to be deplored, for the illegitimate destruction of game that is effected by lumber-jacks and others from such camps is, in many cases, great and yet at all times most difficult to prove. In the case of the reserves, at least, some measures should plainly be taken to prevent the possibility of this evil occurring from this source, as well as from prospectors and other parties. In many instances, however, the lumber jack and prospector carries most of his worldly possessions about with him, and should he chance to be the owner of a gun, it might be hard on him to compel him to dispose of it or leave it behind when entering a reserve, for these persons are frequently of a more or less nomadic disposition and consequently unlikely to come out of the reserves at the point at which they enter them. Again, in the case of the traveller who might find it necessary to cross the reserves on his road elsewhere, it would be an obvious injustice to force him to abandon his firearms or to penalize him for carrying them across the reserves. It would seem, therefore, that some system might well be devised and enacted to meet special contingencies of the nature indicated. In some reserves, outside of the Province, it has been found both simple and effective for the superintendent or rangers, as the case might be, to seal all firearms which for one reason or another have to be taken into the reserves, the breaking of the seal by the owner of the weapon while in the reserve being deemed proof of an infringement of the game laws. There might, of course, be some little difficulty experienced by those entering the reserves by unfrequented routes in getting their firearms sealed, but if due discretion were used in this regard, it would seem that the introduction of such a system into the reserves of

this Province would be beneficial, for it would eliminate to a great degree the trespasses perpetrated by means of the firearms which on one excuse or another are now taken into the reserves, and would, moreover, greatly facilitate the detection of such offences. It is not, of course, intended to imply that firearms, even though sealed, should be allowed generally to be carried in the reserves, for unquestionably the prohibition of the carrying of firearms altogether is the surest means of affording protection to the game, but that in those cases where the law cannot be enforced without undue hardship the system indicated should be available to guard against the weapons being made use of while the owner was staying in or traversing the reserves.

As before noted, the forest reserves of the Province contain a great quantity of valuable pine, and there is, of course, to be found in them also an abundance of timber suitable for pulpwood and other purposes. In some of the reserves lumbering concessions, granted many years ago, are still in force, but it is to be noted with satisfaction that the Government has had this matter under its consideration with the result that arrangements have recently been made to buy out the lessees in the Algonquin National Park. There can, indeed, be little question that ordinary lumbering for commercial purposes is neither calculated to improve the scenery nor to add to the pleasure of tourists visiting the reserves, and is, moreover, a source of considerable danger to wild life, so that it would appear that the efforts of the present administration to abolish lumbering in the reserves cannot be too highly commended. There are, indeed, such vast areas of forest lands available for pulpwood and other timber in the Province that there would appear to be no excuse for throwing open any further concessions in any of the reserves in the future, more especially so as the Grand Trunk Pacific Railway will render accessible a new area capable of meeting the demands for pulpwood, at least, for many years to come. The pine on the reserves is undoubtedly very valuable and in regard to the belts of these trees, as of other varieties of timber, it is to be noted that in the best interests of the forests it is often advisable to remove yearly a percentage of trees, which having attained old age will otherwise fall and decay, or for other reasons connected with the attainment of full growth by the bulk of the timber, as also, of course, in the event of an area having been burnt over. It has been proved in other countries that under scientific direction and management forests can be made to produce an annual crop, as do other products of the soil, without impairing the available quantity of timber and without in any way injuring the scenic effects. It would seem, therefore, that if a permanent forestry corps were established, one of its duties might well be to care for the reserves after this fashion, but in any case it may be observed that, were it deemed advisable for one reason or another to remove timber from the reserves, it would appear that the operation might with advantage be undertaken by the Government for the benefit of the public treasury, for after all, under the license system, the bulk of the profits is diverted into private pockets.

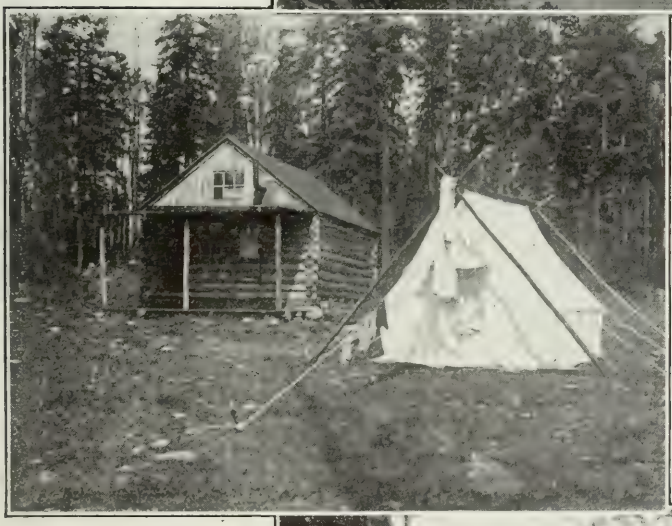
The Nipigon Forest Reserve.

The Nipigon Forest Reserve stands unique among the provincial parks in that it contains one of the finest and most beautiful sheets of water in the Province, Lake Nipigon, and a river, the River Nipigon, already world-famous for the grandeur of its waters, the magnificence of its scenery, and the splendid trout angling that it affords. It is hardly open to doubt that the advent of the Grand Trunk Pacific and Canadian Northern railways into this region will result in an ever increasing number of tourists visiting this reserve and taking advantage of its splendid angling. So important, indeed, from the point of view of the tourist traffic are, and will continue to be, the trout fisheries of the River Nipigon, and also, in fact, those of the rivers and streams flowing into Lake Nipigon, that too great attention cannot well be paid to conserving and maintaining them.

There has unfortunately in the past been a considerable traffic in the skins of large speckled trout taken from these waters. Both in certain portions of Lake Nipigon and in the shoaler waters of the River Nipigon the fish congregate thickly during the spawning season, and advantage has been taken of this fact by Indians and others unlawfully to secure quantities of large fish by placing nets on the spawning beds or by spearing. The skin of a six to eight pound trout has commanded a comparatively high figure and the firms trading in the district have apparently all of them been only too willing to purchase as many as they could get, retailing them subsequently to the railways and others interested, or even using them themselves, for advertising purposes, and also, it must be confessed, selling them to certain of the visiting anglers whose prowess or good fortune has been insufficient to gain for them the anticipated trophy in the shape of a large trout, and who purchase the skin they had hoped but failed themselves to secure. The number of fish which attain the maximum size must obviously be limited and it is apparent, therefore, what an enormous number of trout of lesser size will be slaughtered in the process of securing several hundred skins of specimens of the largest dimensions, and it cannot be doubted that this traffic has in some considerable measure been responsible for the diminishing numbers of trout in these waters. In any case it is illegal to take the fish by netting, and it is hardly to be doubted that the traffic in skins is illegal also under the Order-in-Council forbidding the sale of speckled trout in the Province of Ontario. However this may be, the traffic should plainly be suppressed at once, for unfortunately it still continued to some extent during the past season.

A special license has to be obtained in order to angle in Lake Nipigon, Nipigon River and adjacent waters, the charge for permanent residents of Canada being $5.00 for two weeks and $10.00 for four weeks, and for non-residents of Canada, $15.00 for two weeks or less, $20.00 for three weeks and $25.00 for four weeks. Seeing that the

Nipigon River from Centre Camp, Pine Portage.
Many fine speckled trout have been caught between the two islands.



Ranger's Hut on the Nipigon, and the Mosquito Proof and Fly Proof Tent of the Commission.

View from the North End of Pine Portage, Nipigon River.

angling to be secured in these waters is altogether exceptional, there can be no doubt as to the wisdom of imposing a special charge for the privilege of enjoying it on visitors and citizens alike, both with a view to conserving the fisheries and of obtaining the maximum benefit from their existence to the general public. It is, however, to be noted that near the mouth of the River Nipigon is situated the village of Nipigon, and that the river itself is only two hours by rail from Port Arthur and Fort William, so that there are, in consequence, quite a number of anglers resident in the district generally anxious to enjoy the sport during the weekends, or for two or three days when opportunity offers, and there is a distinct feeling in these quarters that a hardship is being inflicted by compelling residents in the vicinity to pay $5.00 for their angling for each period of a day or two only when a fortnight or more intervenes between the visits. Indeed, it would appear that, during the last year or two at least, the collection of the license from residents in the vicinity has been very lax on this account, and that quite a number of such persons have more or less frequently fished some of the lower pools of the river, particularly in the neighborhood of Camp Alexander, without paying any license at all. It is evident that whatever a law may be, it should be enforced, for failure to do so is morally evil in its effect. Moreover, in a matter such as this, where exceptional expenditures are being borne by the public to conserve and maintain exceptional fisheries, there is no apparent reason why the resident in the vicinity should be allowed special privileges over other residents of the Province. On the contrary it would seem but just that the law applying to one should apply equally to all, and this undoubtedly is the intention of the authorities. There may, however, be reasonable grounds for the contention that an undue hardship is inflicted on residents in the vicinity through the minimum cost to fish these waters being fixed as high as $5.00. Undoubtedly those who reside in the neighborhood will be in a position more frequently to visit the reserve than those who live at a distance, and, also, these visits, while more frequent, will be less likely to be prolonged for even fourteen days. Moreover, there are and will be cases when residents of other portions of the Dominion, travelling by, would avail themselves of the opportunity of a day or two's fishing, but are deterred by the present cost of the license taken in conjunction with other unavoidable expenditures. Consequently it would seem that some steps might be taken to meet these conditions. A charge of $1.00 per diem should be quite satisfactory to those who in passing wish to fish for a day or two only, or to those who from neighboring towns or villages visit the reserve for the purpose on one or two occasions only during the year for periods of a very limited number of days, and at the same time would be a fair recompense to the public. To accommodate those whose opportunities of indulging in the sport afforded by these waters are frequent, but of brief duration, a season pass might be instituted, to cost $10.00 and to cover thirty days in the reserve no matter when taken during the open

season for speckled trout, it being required of such pass holder to have his license endorsed with the periods of his stay on the occasion of each visit. The cost of the license to cover four successive weeks of angling in the reserve is at present $10.00, so that by instituting a season pass as suggested the percentage of charge to the number of days of presumptive angling as at present existing would not be materially affected. It would seem certain, in fact, that if the suggested amendments in regard to the scale of licenses for residents of Canada are carried into effect, not only will they prove a great convenience to many, but also should act in the direction of increasing the revenue from this source, seeing that there would no longer be any possible excuse for laxity in the collection of the monies due to the Government. It is to be noted in this regard that there is vested in the proper quarters authority to grant a limited number of complimentary licenses, and doubtless this power is wisely administered, so that if such licenses are not obtainable by certain gentlemen of local or political prominence, they should be required to take out the regular license like any ordinary citizen, and not be allowed, as has too frequently been the case of late, to angle in these waters without a license of any description whatsoever. In regard to the non-resident licenses as at present existing, it would appear that it is deemed both reasonable and just by the majority of visitors that additional fees should be charged them and that the present scale is equitable.

There can be little doubt but that one of the main causes which led to the introduction of a special angling license for the Nipigon Reserve was the desire to conserve the brook trout fisheries of this region. There are naturally many other varieties of fish in these waters which are capable of affording sport to anglers, such as the lake trout, pickerel and pike in Lake Nipigon and River Nipigon, and the latter two in all probability in most of the other streams of the district also, while there is at least one instance in the reserve of a comparatively isolated lake well stocked with black bass. As the regulation reads at present the license fee is charged for " fishing in Nipigon River, Nipigon Lake and adjacent waters," so that it is apparent under the law as it stands there is no distinction in regard to the class of fish angled for. There can be little doubt that this is a reasonable precaution, for over a great deal of these waters, most particularly in the River Nipigon and other streams, it is without the power of the angler when trolling or bait casting to decide on what fish he will catch, and though his intention might be to secure a pike or pickerel, a speckled trout might become attached to the hook. In general, also, it is to be noted that visitors would hardly go to the expense of visiting the reserve for the purpose of angling for pike, pickerel or lake trout, which they could find in equal or greater abundance at far less expense to themselves in more accessible portions of the Province, and in the case of the lake containing bass, already referred to, it would seem altogether improbable that visitors would journey so far

to angle in this lake when excellent bass fishing can be secured over so wide an area on this continent. The occurrence, moreover, of a bass lake in the midst of this trout region undoubtedly enhances its value in the variety of sport which it affords to the visiting anglers. On Lake Nipigon there are a number of small settlements and undoubtedly the number of persons living permanently in this vicinity will rapidly increase when the Grand Trunk and Canadian Northern railways are completed. At the present time unquestionably a considerable proportion of the persons resident on the shores of the lake indulge in angling, chiefly for lake trout and pickerel, without paying the license fee which would appear to be called for under the law. It would be impossible to begrudge persons living in so wild a region the privilege of taking a few fish from the waters of so great a lake as Lake Nipigon without paying a license, and, indeed, the matter is only called to attention for the reason that there are undoubtedly great numbers of magnificent speckled trout in the lake, as well as of other sporting fishes such as the pickerel and lake trout, and when the opening of the railways brings not only an increased number of permanent residents to the neighborhood but some visitors, at least, from outside, all anxious to fish these waters, it will have to be decided in how far the special license is to be enforced on the lake, for it would plainly be inexpedient to apply the license to some and not to others. Probably when the fisheries of the lake become better known, it will be possible to locate the areas inhabited chiefly by the speckled trout, and it would seem that if all such areas, together with all streams and rivers in the reserve, were declared subject to license, both to residents and visitors, it would sufficiently well meet the case, for undoubtedly great stretches of water would remain available to those who did not wish to angle for speckled trout in particular, but were content to confine their efforts to other varieties.

The expense of fishing the Nipigon River is at present very considerable to the average individual. The waters of the river are rapid and dangerous in many places; in others altogether unnavigable; so that the angler visitor is practically compelled to take with him one or more guides. The exploitation of the tourist traffic has fallen into the hands of three firms trading at Nipigon Village, each of whom undertakes the complete outfitting of parties, including the furnishing of tents, canoes, guides and provisions, and it is not overstating the case to say that both arrangements and charges are in general excessive. This is naturally to be deplored, for it must obviously tend to keep would-be visitors away, but on the other hand there is no apparent remedy other than that the authorities controlling the reserve should institute and operate a government outfitting agency, and thus reduce expenses to visitors to a minimum. Such a step, however, will probably be adjudged impracticable, although it would have one great advantage, in addition to saving the visitor considerable sums, which is worthy of consideration, namely that by employing only trustworthy guides, if necessary, indeed, importing

French-Canadians or others from other portions of the Province for the purpose, the tourist would not be left to run the risk of being paddled through dangerous waters by Indians or half-breeds under the influence of liquor for a period of time after leaving the starting point, or else unversed in the locality and unskilled in the management of a canoe; unpleasant and dangerous experiences, in fact, such as were actually encountered by this Commission when visiting this reserve. Possibly the opening up of the country through the advent of new railways into the region will tend of itself to improve this state of affairs, for it cannot be doubted that many of the rivers flowing into Lake Nipigon will in due course furnish sport to many anglers and thus not only should fresh competition arise in the matter of outfitting visitors, but the expense, also, to the visitors should diminish, seeing that many other of the rivers of the district will in all probability afford sport equal, or nearly so, to that obtainable on the Nipigon River itself, and will be more accessible and more easily fished, so that visiting anglers will select these to go to rather than the Nipigon River unless the outfitting charges for the latter materially decrease.

The comparatively high license charged for the privilege of fishing the River Nipigon would appear to warrant the expectation on the part of visitors that everything will have been arranged for their comfort. The conditions on the river, however, fall far short of what could reasonably be anticipated in this direction, although it is to be noted that the visit of the Minister of Lands, Forests and Mines, who appreciated this fact to the full, resulted in the immediate institution of measures which will to a great extent remedy this state of affairs, if properly carried into effect. There can be no question that in so valuable a tourist centre as this portages should be kept clear and in good order, landing places provided and made easy and convenient for ladies as for men, numerous camping sites prepared in convenient localities and kept clean, and in general everything made as pleasant to the visitor as possible. A considerable staff of rangers is maintained on the river and would be more suitably employed in attending to these matters under the direction of the superintendent than in lounging in the log huts provided for their use more than half the day, and spending the balance in angling, gossiping with the Indian guides, and other similarly useless occupations, as appears to have been the custom prior, at least, to the visit of the Minister, last summer. In addition to these improvements undoubtedly a great deal could be accomplished in the matter of improving angling facilities along the banks. Too frequently it is the case that only one side of the river for long stretches is fished at all for the reason that only on one side is there a convenient pathway, and further, even where paths are available, for long distances it is impossible to fish in any manner whatsoever owing to the density of the overhanging vegetation, although in numerous instances pools, channels, rapids and other inviting and likely spots for sport have to be missed on this account. Under

Rapids on the Nipigon River.

View of Nipigon River from Pine Portage.

present conditions a very small fraction of the available water area can be fished at all, and this, no doubt, may in some measure account for the diminishing success of anglers in recent years, for where certain localities are thrashed day after day throughout the season by a variety of anglers, and no other places are open to the trout, it is but natural that the fish should avoid these spots and seek quieter retreats. It would seem, therefore, most advantageous that some effort should be made to clear places here and there along both banks of the river at reasonable distances apart in order to open up the extent of river which can be fished.

A limit of catch of 30 speckled trout of 10 lbs. weight of this fish to one angler in one day is in force in the reserve as throughout the Province. It would seem that the guides, some of whom are indisposed to work to such a degree that they willingly take advantage of any excuse to avoid it, in certain instances impose on the visitors to the extent of forcing them to abandon sport for the day when 10 lbs. weight of fish of any variety has been caught. No regulation to this effect is in force, or in the least necessary, so that it would appear that steps should be taken to apprise each visitor of the true facts of the case. In regard to the limitation as to speckled trout it may be observed that the fish landed at the present time in the Nipigon River run probably on an average about two pounds, while much larger fish are to be taken and are still caught comparatively frequently each year. It is apparent, therefore, that if the angler is fortunate the period of his sport is likely to be very brief, and in view of the charge made to the angler for the privilege of angling, this would appear, perhaps, to constitute a hardship. In another section of this report the question of returning uninjured fish to the water has been discussed, and it has been shown that it is feasible to do so in the case of fish lightly hooked in the membrane of the mouth, provided due precautions are taken in the matter of handling. No angler could desire, or should be allowed to kill, more than ten pounds weight of trout in one day, but it would seem that in view of the exceptional size of the trout in the Nipigon River the angler might be allowed some measure of privilege in the matter of returning uninjured speckled trout to the water and so prolonging his legal period of sport. Fly fishing is the method of angling least likely to injure the trout which are hooked, and if the privilege were granted to those employing this method, doubtless it would prove generally satisfactory to the visitors and at the same time would be calculated not to materially injure the fisheries.

An interesting point arises in the question as to whether rangers in this reserve are entitled to angle for speckled trout. The public is charged a comparatively high fee for the privilege and the rangers themselves are paid an excellent wage at the expense of the public. Under the circumstances previously noted, where the ranger had, apparently, nothing much else to do than angle in order to pass away the time, it is plain that, if he were any sort of a fisherman, he would soon become

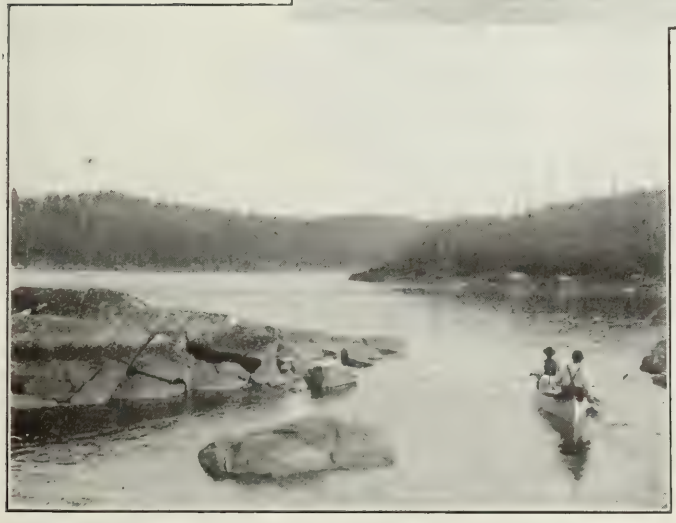
aware of the most likely spots on his beat and thus be likely to secure quite a number of fish during the course of the season. Further, it could hardly be but galling to the visitor, under license and other expenditures, to find the rangers fishing the same waters as himself and if not actually securing the greater share of the sport, at least by their operations tending to lessen his chances of success. Indeed, more than one complaint on this score was to be heard during the past season. It would seem, however, that care will be taken in the future to keep the rangers fairly busily employed so that their leisure hours for angling will in any case be materially diminished and there will be, in consequence, considerably less likelihood of their interfering with the sport of visiting anglers, but there appears none the less to be little, if any, reason for exempting the rangers from the normal fee should they desire to angle, other than that they may be able to secure fresh fish for their consumption. There are practically throughout the length of the river localities where the coarser fish, such as the pike, abound, and it is to be noted that in these cold waters the flesh of the pike is firm, flaky and not at all unpleasant to the taste. In such localities, also, the pickerel is often to be found, and is, of course, a splendid table fish. Eight or more rangers removing speckled trout from the river almost every day for five months would obviously be a considerable drain on the resources of the river, and as one of the principal objects of this reserve is to secure the perpetuation of the River Nipigon's magnificent speckled trout fisheries to the public, it would seem that if the rangers require fish for food, they might reasonably be required to angle for and take only the coarser varieties, and that in the event of their being desirous of angling for speckled trout they should be treated in the same manner as the general public and compelled to take out the ordinary license.

Although no small portion of the duties of the rangers on the River Nipigon must plainly occur in the vicinity of the river itself, it should also be made clear to them that the forests of the reserve on either side of the river are under their charge and some system should be devised whereby these tracts may be frequently patrolled. At the present time a light railway is in operation a short distance to the west of the river from Camp Alexander to South Bay, and already the apparently inevitable results of a steam engine are in evidence on both sides of portions of its right of way in the gruesome spectacle of burnt and ruined timber. Apparently but little attention has in the past been devoted either to this railway or to the forests on either side of the river in general in the matter of fire ranging, and it would seem most expedient that greater efforts should be made in this direction in the future.

The extent of the reserve is very great and the superintendence of its rangers is complicated by the necessity of supervising the tourist traffic and the collection of the license fees from anglers on the river itself and by the construction of the Grand Trunk Pacific Railway. Lake Nipigon, moreover, is a body of water easily disturbed by wind

Rapids in the Quetico Forest Reserve.

A Favourite Method of Travelling Over the Larger Lakes in the Quetico Forest Reserve and Rainy River District.



View on the Namakan River, Approaching the Quetico Forest Reserve.

and very frequently unsafe, in consequence, to all but comparatively large boats. At the present time the superintendent has his headquarters at Nipigon village at the extreme southerly end of the reserve, and is provided with no boat with which to move about the lake or cross it, but is forced to depend on the steamer plying between certain points on it in the interests of the firm of Revillon Brothers. His charge includes the river and lake with the forests on either side of them, although at the present time the right of way of the Grand Trunk Pacific Railway is under a separate fire ranging service. The construction of the Canadian Northern Railway as projected would appear likely to still further enhance the difficulties of ranging and of supervision of the same. Even though the same policy were pursued for the protection of the forests during the construction of this railway as has been followed in the case of the Grand Trunk Pacific Railway, namely of allocating a separate body of rangers under separate control to the work, it is plain that when the railways are in operation there will remain at least an equally great necessity for strict precautions against fire, and, therefore, it is only reasonable to presume that ultimately those sections of railway which pass through the reserve will be included in the charge of the superintendent of the reserve. It would seem, then, that some little reorganization of the present system might be advisable in the near future, in order that it may be capable of expansion as necessity arises without impairing or upsetting its arrangements.

The superintendent must in any case be a very busy man, with so vast a district under his charge, and he should obviously be provided with a boat of sufficient size to enable him to move about the lake in all weathers and in all directions. A boat of the Class B type, as recommended in the Interim Report of this Commission, would appear most suitable for the purpose. The logical headquarters of the superintendent should apparently be at some point on the south shore of the lake, whence he can readily move to any point of the reserve, and as the terminus of the light railway, previously referred to, is located at South Bay, where there is convenient shelter for a boat, doubtless this would be found to be the best location. It would obviously be impossible for the superintendent to devote very much of his time to the protection of the forests against fire if his presence is required more or less continuously on the river for the issuance of angling licenses and the collection of the fees, so that it would be indispensable that he should be furnished with some form of deputy to attend principally to this duty. The configuration of the territory breaks the reserve into two distinct portions, the northern including Lake Nipigon and the forests bounding it to the north, east and west; the southern, the River Nipigon with the forests on either side of it. The Canadian Pacific Railway is at present the chief means of access to the River Nipigon for visitors and must continue to be so until the other railways are in operation, but eventually this monopoly will disappear and stations or getting-off places on the

other railways become available to the tourist. Perhaps, therefore, the best arrangement for the supervision of the ranging in the reserve would be to furnish the superintendent with two permanent chief rangers; one to be located in the northern section, with headquarters at Ombabika Bay or some other suitable point; the other in the southern section, with headquarters at Nipigon station. By this arrangement the superintendent would no longer be more or less tied to the vicinity of the Canadian Pacific Railway station at Nipigon village during the dangerous months for fire, but would be enabled to move freely about the reserve at all times and see that the work of every description was being properly carried out. Moreover, provision would thus be made for treating the reserve as a whole under the conditions which at no very distant date will prevail in it.

It is to be noted that at the present time very little is known of the angling potentialities of Lake Nipigon and the rivers and streams entering it, beyond the general fact that speckled trout are abundant in some parts of the lake and in most, at least, of the rivers and streams flowing into it. It would seem that under an active superintendent, relieved of duties which keep him practically continuously in the vicinity of the river, investigations might well be instituted in the direction of ascertaining the extent of these sporting resources, for undoubtedly a good many anglers will avail themselves in due course of the new railways to visit this region and it cannot but be the part of wisdom to have acquired some information as to them prior to their arrival. In fact, even outside of the reserve in this region it would seem highly advantageous that some authentic information should be gathered as to the available fisheries and game, and as to the best methods of protecting the same, for at the present time information on this subject is practically non-existent, and yet both the fisheries and game should prove a considerable asset to the Province if properly viewed and treated. The appointment of a special officer for this purpose would appear to be the most suitable method of acquiring accurate information.

Various rumors were afloat during the past year as to the intentions of the Government in regard to pulpwood concessions in the reserve. Whatever the truth of these may have been, or whatever the future intentions of the Government may be in this regard, it is to be hoped that under all circumstances the beauty of the scenery around the river and lake will be most rigidly safeguarded by the maintenance in its wild form of a wide belt of trees, and further, that under no circumstances will the noble River Nipigon ever again be subjected to the log driving operations of some lumber concessionaire, for it is not to be doubted that the scenery of both river and lake constitute one of their principal attractions, or that log driving down the river would immeasurably depreciate, even irretrievably ruin, the trout fisheries.

A Portage in the Quetico Forest Reserve.

A Rough Portage in the Quetico Forest Reserve.

Tracking in the Quetico Forest Reserve.

The Quetico Forest Reserve.

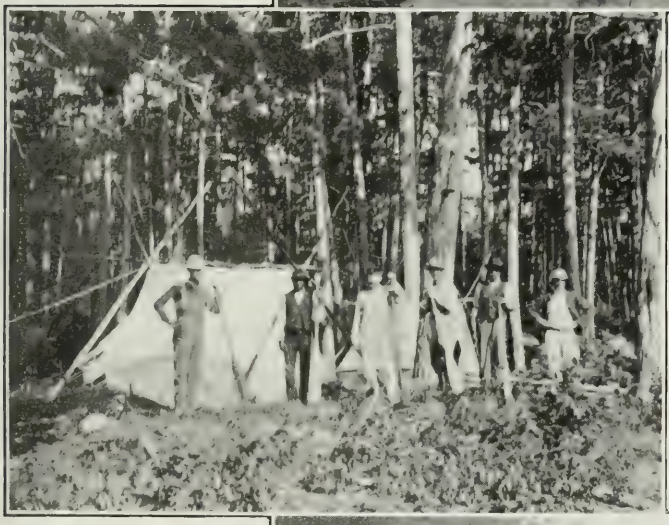
The most recent addition to the provincial parks of Ontario is the great Quetico Forest Reserve, situated in the extreme west of the Province in the Rainy River District. One of the most interesting features of the reserve is the fact that its creation has afforded an opportunity for international co-operation in the matter of the conservation of wild life, for its southern borders touch for some distance the International boundary and are conterminous with an extensive reserve on the southern side. At the present time the reserve is well out of the path of civilization and is, in fact, somewhat difficult of access, but the citizen or foreign tourist, who takes occasion to visit it, is well repaid for his trouble in the general beauty of the scenery that meets his eye and in the abundance of wild life that is to be seen almost everywhere, and there can be little question that as the attractions of the reserve in these directions become better known, greater numbers of both citizens of the Province and visitors from outside will yearly take advantage of them. The peculiar appellation of the region in which it is situated, the Rainy River District, is perhaps somewhat calculated to keep visitors away, but as a matter of fact this name, which was derived from that bestowed on the great river flowing through it by the old-time French-Canadian pioneers, is but a mistranslation of the French word "Reine," and the district itself enjoys a climate as pleasant, bracing and dry as that of any other portion of the Province.

But little accurate information of the geography of the reserve is available. Ten rangers, working in pairs, are placed in it for five months of the year which constitute the fire ranging season. This force is collected at and despatched from Fort Frances and gains access to the reserve either by the Namakan River or through Lake La Croix, and is under the superintendence of a chief ranger, but as under favourable circumstances it will take three days for the men to reach the nearest and most accessible beat and as also there is not one permanent member of the corps, it is only too evident that not only will there be a temptation in so wild and distant a region for the men to neglect their duties, but also there will be but little probability of accurate information as to the geography, or timber, game, mineral and other resources of the reserve being obtained by this means. Indeed, a trip through the heart of the reserve disclosed the fact that in the majority of cases the rangers keep to the larger rivers and lakes, remain in blissful ignorance of the geography of their beats, and undertake or attempt but very little work. Consequently, not only is the great bulk of the reserve left practically uncared for, but routes of access to the inner portions remain unexplored and throughout the reserve portages have become overgrown or concealed and their landings, in this wild country in almost every instance difficult, have remained unimproved, so that the difficulties of successful ranging have in no way been removed for the ranging service of future

years. There can be no doubt that in this region, so far distant from civilization and from assistance, if ranging with a small staff of men is to be of any avail, no means of facilitating it can safely be neglected. In fact, the very inaccessibility of the reserve at present would seem to render it all the more imperative that not only should it be thoroughly explored and trails to every part of it be opened up and kept clear, but that steps should be taken to insure that the rangers become intimately acquainted with their beats and that a system be devised and introduced whereby the utmost advantage may be taken of the small staff available in the event of fire breaking out in any section of it, by rapid concentration of the whole force, if need be, at the point of danger. It has unfortunately to be recorded that a brief visit to the reserve disclosed the fact that considerable areas of it have already been burnt over, and in fact it would appear that perhaps the finest pine belt of the reserve, that occurring on Eden Island in Lake Quetico, estimated at 20,000,000 feet, was only with the greatest difficulty, and at that only owing to a change of wind, saved from destruction by fire, so that it is apparent that if the reserve is to fulfil its functions and to be conserved to posterity, greater expenditures will have to be devoted to the maintenance of a more adequate staff to protect it.

Moose, deer, fur-bearing animals and wild life in general abound in the reserve. On one occasion, within the short space of an hour or two, no less than 14 moose were counted, and so fearless are these creatures in this locality that it was almost invariably possible to approach to within a few yards of them in canoes. So inquisitive, indeed, was one specimen that while the party was lunching on one bank of a stream, it entered the water from the other bank and swam across towards it, and when canoes were launched and started to meet it, it was not until the prow of one canoe actually touched its head that it could be diverted from its purpose. Tracks of moose and deer were everywhere to be seen in abundance, and those of bear and wolves were not infrequently observed, while it was of rare occurrence that the morning would not reveal the inquisitiveness of the smaller creatures by the tracks or marks of numerous varieties around the vicinity of the camp. At the present time no protection is afforded the reserve from October to May, and the very abundance of the big game and fur-bearing animals undoubtedly offers very great temptation to the hunter and trapper who is aware of this fact. Indeed, investigation of such evidence as was obtainable and the examination of numerous witnesses all tended to indicate that advantage is taken of the unguarded condition of the reserve and that considerable depredations in these directions are annually effected. In the winter, when the lakes are frozen over and the forests bare, travelling is very considerably facilitated, and it would appear that hunters and trappers alike enter the reserve, chiefly, perhaps, from the States, and shoot the moose and other game and capture the fur-bearing animals to their heart's content, removing their trophies across the border

Bear Lake Portage, on the way to the Quetico Forest Reserve.



Camp Eden Island, Lake Quetico. It is estimated that there is 20,000,000 ft. of pine on this island.

A Corner of Lake Seiggilagan.

before the snow melts and before the appearance of the provincial rangers. In addition to this it would seem that various families of Indians, located in the vicinity, establish their winter hunting and trapping grounds within the confines of the reserve. It is, of course, not to be expected that over so great an area, which has been placed in reserve only comparatively recently and which is so difficult of access, the ranging service and general arrangements should have been sufficiently perfected, within the short space of time available, to prevent all illegal depredations on the wild life in the reserve, but it would appear from the evidence obtained in the locality that the extent of these depredations is in all probability very considerable and consequently that, unless something is done to check them in the near future, the game and fur-bearing resources of the reserve will be materially impaired. In fact, the reserve should be declared a game reserve without delay, and there is little question but that some proportion of permanent staff is much to be desired, and it would hardly appear to be erring on the side of extravagance to suggest that four permanent posts of two rangers each should be established in this great reserve under the direction of a permanent superintendent. If even so small a staff as this were maintained and the posts placed at strategic points, although in the winter it would be impossible to watch every means of ingress into the park, at least the principal and most frequented winter routes could be watched and patrolled, and undoubtedly a great deal of good would be effected. Perhaps the best location for such posts would be:—

(1) Lake La Croix, near the mouth of the Namakan River, thus controlling three main routes into the reserve, Namakan River, Maligne River and Crooked Lake.

(2) Quetico Lake on Eden Island, thus controlling the district about and routes over Quetico Lake, Quetico River, Jean Lake and Long Lake.

(3) Pickerel Lake in the vicinity of Pine portage, thus controlling routes by Pickerel Lake, French River and Batchewang Lake.

(4) Basswood Lake at its eastern end, thus controlling the waterways of Agnes Lake, Birch Lake and Basswood River.

By this means the international boundary would be watched at two points and provision would be made for the interior portions of the reserve.

In regard to the angling facilities afforded by the reserve it is to be observed that in Basswood Lake and Basswood River black bass of good size are alleged to have been caught, but that in so far as is known this fish does not occur in other portions of this region in Canadian territory. There is in general no difficulty for the angler to secure all the fish he requires for food. In most of the lakes there would appear to be an excellent variety of lake trout which can be secured by trolling. Quetico and Jean Lakes, two of the most beautiful lakes of the district and possessing waters of a wonderful clearness and light green colour, are par-

ticularly noteworthy in this respect. In almost all the lakes pickerel are to be caught and there is, also, throughout the region an abundance of pike which in these waters appear to be somewhat more vigorous and gamey than the average of their kind, and fairly pleasant to the taste. The existence of the mascalonge in the reserve has not as yet been determined, although rumours of its capture in certain of the lakes are occasionally to be heard, but the occurrence of this fish in the waters of Lake of the Woods would appear to indicate that there is a reasonable possibility of such being the case. The question of whether it is feasible to introduce other varieties of sporting fishes into these waters and whether it would not be expedient to make some attempts in this direction is worthy of consideration, for the general scenery of the park is so beautiful, its facilities for pleasant camping, bathing and canoeing so peculiarly attractive, and its opportunities for the observation of wild life so great, that there can be but little question that in the natural course of events it will ultimately become one of the most popular tourist resorts of that region, and the additional feature of really first-class angling would but tend to hasten the march of events in that direction. The Quetico Forest Reserve is indeed a most valuable acquisition to the public parks of the Province and the Government is to be warmly congratulated on its creation. It remains only to be hoped that in the course of a few years means of access to it will become improved, its numerous attractions and advantages more widely known, and that in the meantime it will be found possible to perfect the arrangements for safeguarding its many valuable resources throughout the year.

Recommendations.

Your Commissioner would, therefore, recommend:—

(1) That all existing provincial forest reserves be declared game reserves without delay; that in the creation of any new reserves in the future this provision always be included; and that the general carrying of firearms in the reserves be forbidden.

(2) That a sufficient staff be maintained in each of the provincial forest reserves throughout the year to insure the protection of the game and fur-bearing animals in them.

(3) That a permanent superintendent be appointed for each provincial forest reserve.

(4) That an inspector of provincial forest reserves be appointed.

(5) That the exploitation of the fur resources of the provincial forest reserves be undertaken by the Government for the benefit of the public treasury; that the necessary trapping be conducted by the permanent staff under the direction of the superintendent; and that the pelts thus obtained be branded with a government mark and sold by public tender.

(6) That visitors to provincial forest reserves be required to pay a registration fee of 50 cents for residents of Canada and $1.00 for non-

John Ottertail, Lake La Croix, who acted as Guide to the Commission in the Quetico Forest Reserve.

residents, provided only that residents and non-residents taking out any special game or angling license as required in any of the provincial parks or reserves be not required to pay this fee in addition to that of such license.

(7) That special attention be paid in the provincial forest reserves to the comfort of visitors in the matters of keeping portages clear, preparing camps and landing places and posting up suitable information as to these and other matters at convenient points.

(8) That the license of any guide employed in any of the provincial forest reserves be forthwith cancelled on the detection of any carelessness on his part in regard to due precautions against fire, no matter where or when such detection may take place, and that this regulation be explained to tourists employing guides in the reserves.

(9) That a system be instituted whereby all such firearms as for one reason or another have to be carried through provincial forest reserves may be sealed with a government seal.

(10) That where for any reason it may be deemed expedient to cut timber in a reserve the work be undertaken by the Government and the timber sold for the benefit of the public treasury.

(11) That trafficking in the skins of speckled trout be rigidly suppressed, particularly in and in the vicinity of the Nipigon Forest Reserve, and that special measures be taken to prevent Indians spearing or netting speckled trout in Nipigon River, Lake Nipigon and adjacent waters during the spawning season of that fish.

(12) That steps be taken to provide better angling facilities along both banks of the Nipigon River by making small clearings at suitable distances apart in the neighborhood of pools, channels and rapids.

(13) That the scale of angling licenses for permanent residents of Canada to fish in the waters of the Nipigon Reserve be arranged as follows:—

(1) A charge of $1.00 per diem, or
(2) A charge of $5.00 for 14 consecutive days, or
(3) A charge of $10.00 for 30 consecutive days, or
(4) A charge of $10.00 for 30 days angling in the reserve during the angling season,

it being provided that in the latter case on each successive visit the holder of such a license be required to have the periods of his stay endorsed thereon by the competent authority, failing which the license to be deemed cancelled.

(14) That the collection of the special license for angling in the Nipigon Forest Reserve be rigidly enforced in the future.

(15) That it be declared legal when fly-fishing in the Nipigon Forest Reserve to return uninjured speckled trout to the water and to continue angling for this fish even though the weight or number of fish actually landed is in excess of the legal number imposed by law, provided only that in no case shall more than the legal number or weight of speckled

trout be killed and that all such fish as are in any way injured must be retained or counted as retained.

(16) That rangers on the Nipigon River be debarred from angling for speckled trout unless purchasing a license to do so.

(17) That special precautions against fire be taken in regard to the light railway operating through the Nipigon Forest Reserve between Camp Alexander and South Bay.

(18) That the permanent staff of the Nipigon Forest Reserve be increased by two chief rangers; one to be stationed in the lake section and one in the river section; that the headquarters of the superintendent be situated in the centre of the reserve; and that a boat of the Class B type, as recommended in the Interim Report of this Commission, be placed on Lake Nipigon; and that greater attention be paid to the patrolment of the forests in this reserve.

(19) That under no circumstances timber be allowed to be cut in the Nipigon Forest Reserve in such a way as to impair the beauty of the river bank or lake shore scenery.

(20) That an official be appointed to examine into and report upon the fishery and game resources of the territory surrounding Lake Nipigon and to the northward of the Grand Trunk Pacific right of way.

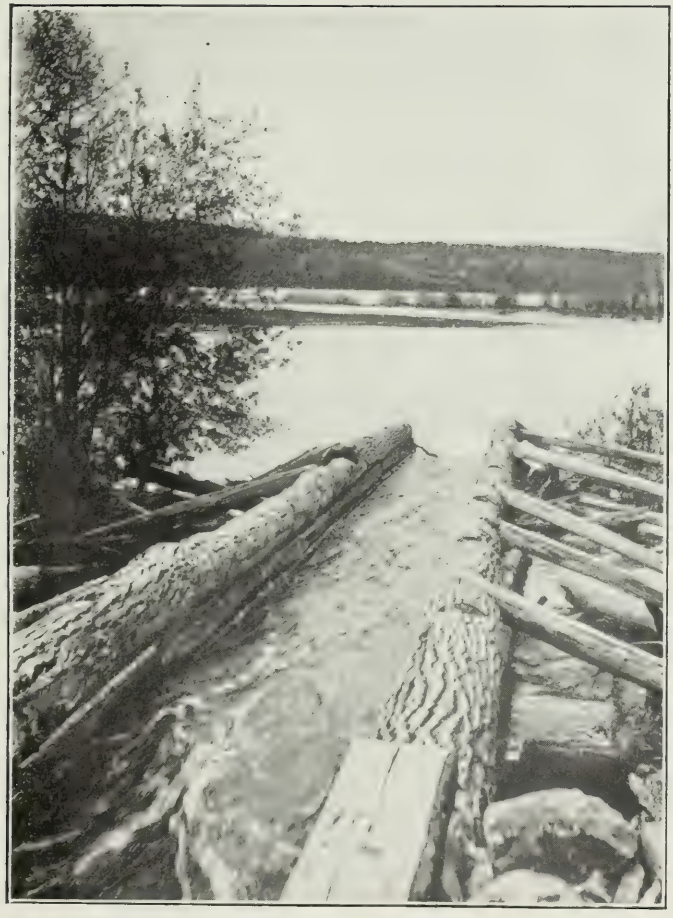
(21) That a permanent staff of at least one superintendent and eight men be maintained in the Quetico Forest Reserve and that permanent posts be established on Lake La Croix, near the mouth of the Namakan River; on Eden Island in Quetico Lake; on Pickerel Lake in the vicinity of Pine portage; and at the eastern end of Basswood Lake, for the use of rangers in the winter months.

(22) That steps be taken to insure the patrolment of the interior portions of the Quetico Forest Reserve; to open and improve communications throughout it; and to secure accurate information as to its geographical features and other resources.

The Game Resources of Ontario.

In the variety of its game the Province of Ontario is peculiarly fortunate, but it is unfortunately the case that of recent years there has in almost every species been a marked decrease in numbers. To a certain extent this was, of course, to be expected, for as the natural habitat of the greater portion of the game of any country is the forest or wild lands, the advance of civilization and the increase of population inevitably tend to limit the areas available to the game. In Ontario, however, the general decrease has not only been noticeable in the more settled districts but almost equally in those more wild and remote but into which the hunter can and does succeed in penetrating.

The diminution in the quantities of game is almost invariably accompanied by an increase in the number and severity of the restrictions placed upon its pursuit, but it must be apparent to every thinking



A Log Slide, Grassy Lake.

person that no matter how wise or necessary the enactment of such restrictions may be, the regulations themselves are worse than useless and bound altogether to fail in providing the desired remedy, if the means of enforcing them are not available There is little doubt, indeed, but that at the present time far less rigorous laws and regulations in regard to the open seasons for the taking of game of many varieties would be found to be amply sufficient to insure the maintenance of an abundant supply if only they were obeyed to the letter by all and sundry, but in this Province, at least, it would appear to be all too often the case that otherwise law-abiding citizens disregard the game laws and break them with impunity, or else deem it no dishonesty or shame to abet or connive at their infraction by taking advantage of the misdeeds of others to satisfy the greed of their own appetites. That this state of affairs is in large measure due to the inefficiency of the officers appointed to act as game wardens and overseers cannot be doubted, for where the officer charged with enforcement of the law is careless or lax in the discharge of his duties, willing to shut his eyes to flagrant offences or even himself to commit them, the public plainly will not be impressed with the necessity for obeying the laws, but rather will be educated to treat them with contempt.

Ideal legislation in this line is that which will allow the greatest amount of sport for the longest possible time, but in Ontario long open seasons cannot as yet safely be attempted in the majority of cases, especially in regard to the larger forms of game, for game is fast diminishing, and until the system for enforcing the observance of the game laws is vastly improved, the standard of its officers raised and the public itself taught to respect and obey the laws, the prime necessity must remain to endeavour to save the game at all costs while these matters are being contemplated and effected. Doubtless some hardship will be wrought on hunters in the process; some dissatisfaction be voiced among them and by those who appreciate game for table purposes and consequently protest at being deprived of their sources of supply or having the same very much curtailed; but these are trifling considerations when weighed in the balance against the importance of perpetuating the game, and the selfish interests of the few must be sacrificed for the present and ultimate benefit of the majority. Even under an adequate system of control some offences will be detected and punished, some persons will be deterred from breaking the law; so that it is apparent that while the outstanding necessity of the case in this Province is to remedy the system of administration and improve the staff, the imposition of additional difficulties in the way of the hunter or additional restrictions upon him can be counted on to achieve some measure of good in connection with the number of creatures slaughtered.

Some complaints have been made against the reduction to one deer only of the number of deer that may legally be killed under one license and to the suggestions, also made in the Interim Report of this Commis-

sion but not as yet adopted, that the open season for deer be made a fortnight later than at present and that the killing of bucks only be permitted, but these and kindred measures and recommendations are enacted and made to meet the necessities of the case as they exist; as a temporary but indispensable means of saving the game resources of the Province from extravagant depletion, if not absolute annihilation. Once some method of increasing or maintaining the supply of game had been discovered or devised, or once some means were available for rigidly enforcing such laws and regulations as might be in force, it would at once become possible in a great many instances to relax the restrictions in regard to numbers, and also, in all probability, to greatly extend the open seasons for many varieties so as to meet practically all the various opinions and wishes on the subject. This is, indeed, the objective which it should be sought to attain, and its achievement rests equally in the hands of the administration and the general public.

One of the principal causes of the destruction of game and wild life generally is the indiscriminate carrying of firearms in the wilder portions of the country. Indeed, in some regions it is quite the exception to meet a man not armed with at least one weapon, and for the convenience of those who chance not to be so supplied, as a rule the young boys and youths of the district only, there is in such cases but small difficulty in renting a firearm for a small sum. All the hardware stores and most of the general stores also in these regions carry a large stock of weapons of many varieties in addition to making a practice of renting second-hand weapons as occasion offers, and it would seem inevitable that so long as this condition prevails the greatest difficulty will be experienced in safeguarding, even perhaps perpetuating, the game in these localities. In no case is the necessity for the habitual carrying of firearms apparent, and in fact it is a menace to peaceful citizens traversing these regions, but while the promiscuous exposing for sale and selling of firearms is permitted doubtless the practice will remain in force. In so far as the protection of game and wild life is concerned there can be little question that it would be most highly advantageous were a gun tax put into force and some control over the exposure for sale and the sale of firearms exercised, more particularly in the direction of preventing the sale or renting of any variety of them to any but *bona fide* citizens or to those who had not as yet attained the legal age of maturity, but to recommend such a measure, affecting so great a diversity of interests and occupations, would, perhaps, be trespassing beyond the limitations of this Commission's range. At least, the resident hunting license, recommended in the Interim Report of this Commission, could be expected to effect some good in this direction, more especially so if it were enacted that to be in the public forests or on the public wild lands in the possession of firearms without such license during the open season for any species of game whatsoever was an indictable and punishable offence.

Logging.

Lumber Camp near Fort Frances.

As before noted, it is quite beyond dispute that at the present time there are innumerable illegalities continually being committed, and it is equally certain that a great deal of the game of many species is unlawfully used for commercial purposes. Most especially so would this appear to be the case in regard to moose meat, venison and partridge in the smaller towns and villages of certain sections of the Province. In general it should not prove a very difficult undertaking to ascertain that such conditions are prevalent, for the matter is usually one of common local knowledge and there are in almost every community to be found persons law-abiding themselves and willing to supply the necessary information provided that they shall not be required to become involved in any prosecution that may ensue. Naturally in small communities it is an unpleasant task to bear open testimony against a neighbour for an infraction of some minor law, and in some sections of the Province, moreover, action of this nature would be far from tacitly resented by the person who committed the offence. Similarly, where local overseers are paid such trifling sums for their services that they are forced to busy themselves in other occupations in order to earn a living and consequently have but little incentive to respect the dignity of their position or to discharge their duties energetically, the temptation is plainly great to overlook the shortcomings of neighbors or friends, with whom, may be, they are associated in business or other occupations every day of the week, in the matter of transgressions of the game laws, or, again, to fear reprisals in the event of indicting the offender. No excuse can be advanced for this attitude of mind on the part of those who take monies to perform certain services in the interests of the public which they will not or cannot discharge, but it is evident that so long as the present system remains in force, so long will a percentage, at least, of the overseers continue deliberately, even though, perhaps, against their wills, to be inefficient. From this fact it would seem that two deductions may safely be made; firstly, that it would be infinitely better to have fewer officials engaged exclusively all the year around in the discharge of their duties, paid sufficiently to raise the dignity of their office at least to that of an average constable and with sufficiently wide territories to remove from them the fear of reprisals in carrying out their duties; and secondly, that until, at least, such a system has been established, information obtained from no matter what source should be followed up and investigated. If, indeed, it once became generally known that the Department was not only willing, but had some means at its disposal for the investigation of complaints and reports of illegalities, it cannot be doubted that information would pour in from all sides and that this would act directly to the checking of, at least open, violations of the law in regard to the exposure and sale of game, for when every member of a small community would be aware of it, and anyone of it might decide to send in a report, which report it was known would be investigated and not pigeon-holed, he would have, perforce, to be a hardened and reckless malefactor who would care to run the risks.

It would seem, therefore, that in the reorganization of the service for the protection of game the objective to be attained is a force, numerically less than at present supported, but carefully selected for energy, discretion and capability, well disciplined and organized, and with each and every member independent of other avocations or business affiliations for a livelihood, and that, also, pending such reorganization and during the process of its institution some special officers should be maintained at the disposal of the Department to act in the capacity of secret investigators of information that may be received, no matter from what locality, and, if necessity arises, as competent representatives of the Government to arrest and indict violators of the law.

Big Game.

The largest existing species of the deer family is the moose which is still to be found in the wilder portions of the Province. The head of a moose forms a magnificent trophy, and for this reason, if for no other, the moose would be eagerly sought after by the big game hunter, but in addition to this the flesh of the moose is most palatable and the carcass has, in consequence, a very considerable value. While it has been found that in captivity the moose is the most sensible of all deer, the least timid and the least easily upset, it is none the less, when running wild, of a shy and retiring disposition in so far as man is concerned. It would seem, indeed, that for its perpetuation in a wild state, at least, it requires a considerable range of wild and wooded territory where it will not be affected to any appreciable extent by the presence of man during the greater portion of the year, and that it will rapidly disappear from a district before the encroachments of civilization. Consequently, it is only to be expected that as the Province opens up the available moose areas will gradually diminish. There are, however, many sections of the Province which never will be suitable for agriculture or in all probability adapted to the requirements of any considerable population, so that with due care and management it should be possible to perpetuate the moose in Ontario for a very long time to come.

At the present time there are undoubtedly considerable areas inhabited by moose, and undoubtedly, also, considerable quantities of moose still remaining in certain of them, but every year the retreats of the creature are diligently searched by an increasing number of hunters during the open season, and as transportation and other facilities render their retreats more and more accessible, it is only too apparent that the drain on the supply is likely to be very much in excess of the normal increase. More particularly so will this be acknowledged to be the case when it is remembered that the settlers in these regions, as well as the Indians, rely in large measure on the moose for at least their winter supply of meat, and that in the villages and settlements of the remoter regions moose meat is still, unfortunately, a fairly common commercial

commodity. The size of the animal, also, militates against its chances of escape if once it is preceived by the hunter, and the largeness of its tracks renders it comparatively easy to follow up.

The bull moose is polygamous and a vicious fighter during the rutting season, which commences, as a rule, in November, though apparently not so disposed at other periods of the year, for in the summer months in localities where moose are abundant, grown bulls are to be seen grazing and drinking together in complete amity. The cows herd shortly before the rutting season commences and remain with the bulls during the winter months, but separate before the calf is born and remain alone with the calf until the following rutting season approaches. It would appear that in the majority of cases but one calf is born to a cow. A curious feature is the apparent nomadic propensity of the moose. Some areas, which once contained moose in abundance, and where there is no apparent reason for their disappearance, are now almost destitute of them, while others, which some few years ago the moose was not known to inhabit, harbor at the present time considerable numbers. How far the presence of the caribou and deer affect the moose it has been impossible to determine, but it would seem that in certain instances, at least, the appearance of the moose in numbers has been coincident with the disappearance of the caribou from the locality, and that the appearance of deer in numbers has been followed by a marked diminution in the numbers of moose, although, of course, there are instances of localities in which two, or even all three, varieties are to be found.

As pointed out in the Interim Report of this Commission, one of the principal difficulties in connection with the perpetuation of big game is removed by the prohibition of the slaughter of the female. Most particularly so is this the case when the males are polygamous. The destruction of a cow or doe entails a loss of reproductive capacity far in excess of that caused through the death of a bull, for the duties of the bull will be performed by another of his sex, even though such other be required to attend to several cows or does, whereas the function of the cow or doe can be replaced by no other of its sex. As an illustration of the effectiveness of saving the females from the hunter, where this law is rigidly enforced in common with other laws and restrictions in regard to seasons and numbers, it is interesting to note that in New Brunswick it is an established fact that there are actually more moose to-day in spite of the increased population and in spite of the inevitable encroachments of civilization than there were two centuries ago. The restriction against the killing of cows or does is objected to by some persons on the grounds that it interferes with nature's arrangements for the maintenance of good stock. It is claimed that the majority of hunters go after the head; that the proportion of the finest bulls—that is, those presumably best for breeding purposes—killed is therefore high; and that the percentage of bulls slaughtered is in any event greater than that of cows. This argument would not appear to be valid in so far, at least,

as this Province is concerned, for the meat of the cow moose is usually more tender than that of the bull, and consequently more highly esteemed for food purposes by those who are more concerned with the meat than with the head, such as the settlers and Indians, and it is an indisputable fact that a very large proportion of the total numbers of this animal killed during the year meet death at the hands of settlers and Indians, while in the case of the deer, even though the distinction between the flesh of the male and female is, perhaps, not quite so clearly marked, the doe is, nevertheless, as a rule, found to be more tender than the average buck. It is further claimed that by forbidding the killing of females the percentage of bulls to cows will be so dangerously decreased that the young, weak or decrepit bulls, which are the least likely to attract the hunter, and consequently the least likely to be shot, will play a far greater part in the perpetuation of their species than they would under nature's ordering, for where the spoils are to the victor in a fight, the young, weak or decrepit bulls are likely to go lacking. Experience, however, would not appear to substantiate this contention, for no one could accuse the moose of New Brunswick of having deteriorated to any marked degree. It would seem, therefore, that this wise provision has been rightly applied to Ontario, for the decrease in the numbers of moose in recent years is indisputable, its securest retreats are gradually but incessantly being rendered accessible, and there can be little question that unless the measure is maintained and strictly enforced the day would soon arrive when the diminution of the moose would become so plainly marked and generally recognized that far more drastic measures would have to be enacted if it was to be perpetuated in the Province. If the measure is vital to the perpetuation of the moose and caribou, it would appear in no less degree to be equally so in the case of deer, and it is, therefore, to be earnestly hoped that the provision will be extended to cover this animal also.

The restriction of one moose to a hunter is reasonable, and no complaints have been recorded on that score, although through many portions of the moose area rumors are afloat of head hunters and others taking far greater numbers when opportunity offered. Particularly so was this the case in the Rainy River District, in the neighborhood of the international boundary, but seeing that, if, as seems probable, some offences of this nature were committed, the offender, in all probability, had no license at all, it does not affect the question of a reasonable bag limit, but serves only to enhance the necessity for better protection.

In regard to the open season, as at present existing, it is to be hoped that a distinction is made between the country to the north and south of the main line of the Canadian Pacific Railway, from Mattawa to the Manitoba boundary; the open season for the northern area extending from October 16th to November 15th, inclusive, and that for the southern area from November 1st to November 15th, inclusive. The great bulk of the territory in which moose is now to be found naturally lies in

Moose Leaving the Water.

Moose in the Water.

the northern section, the only very considerable exception being that portion of the Rainy River District lying to the south of the Canadian Pacific Railway. The growing scarcity of moose in the southerly regions generally and the earlier advent of snow in the northern doubtless both played their parts in the selection of these dates. It is to be observed, however, that the Temiskaming and Northern Ontario Railway has already pushed up into the northerly regions, while the right of way of the Grand Trunk Pacific Railway has already been cut, all of which is tending to render this area more accessible, and will continue to do so in increasing measure in the future. It becomes, then, a question whether it would not be advisable to reduce the open season for moose in the north lands to the period of time now prevailing in the southerly regions. The provincial resources in moose are mainly located in it; the more southerly regions have been largely depleted; the total numbers of moose throughout the Province are known generally to be decreasing; and supervision in these regions of the settlers and Indians is at all times difficult in regard to game. For these reasons it would appear that such a step would be in the best interests of the perpetuation of this noble animal in the Province. It is to be noted, also, that in those sections of the Rainy River District where the moose is now hunted, there is practically no difference in climate between the northern and southern sections as now differentiated between in the matter of open seasons for moose, while moose are apparently as proportionately numerous to the south of the Canadian Pacific Railway as they are to the north of it in this region, so that the differentiation now in force is a manifest absurdity when applied to this district.

The question of the best dates for a general open season of two weeks throughout the Province is somewhat difficult to decide upon. There can be but little doubt but that the open season for all species of deer found in Ontario should be the same, where all are liable to be found in approximately the same areas, and that the presence of the hunter in the woods in legitimate pursuit of one variety cannot but endanger the others. In the Interim Report of this Commission a recommendation was made that the open season for deer be declared from November 15th to 30th, and the reasons for the making of this recommendation were fully set forth therein. Objection to it has been taken by some hunters on the grounds that snow is to be expected by that time throughout the bulk of the deer country, and tracking will thus be rendered easier. Granting that this is the case, it would seem that the objection is fully compensated by the advantage, also incidentally deemed an objection by some, that the general conditions will be less pleasant for the hunter, and that consequently less persons can be expected to go into the woods after the deer. Pending the introduction of an effective game warden service it is, as before observed, necessary to make hunting a little difficult. A more forcible objection has been advanced, namely, that the rutting season is in full swing and that the

flesh of bucks is unsavoury during this period. Undoubtedly both these contentions are facts. The presence of hunters in the woods will tend to scatter the deer, which is to be regretted in the rutting season, but it is to be noted that the same effect is produced more or less under the dates of the open season as at present existing, while none the less the bulk of the deer appear to succeed in performing the functions necessary for reproduction. The meat of the males is certainly strong in flavour during this period, but, although some meat in consequence might be wasted, it would appear that the obvious results can only be a diminished demand for it and in consequence a diminished slaughter, which after all are the principal objectives now to be sought. Were these dates applied to the moose, the above remarks would be applicable to its case also, in the main, but it must be acknowledged that as the bull moose is so strong and so vicious during the rutting season, this might be held to constitute a sufficient reason for not sending hunters into the woods when the rutting season is in full swing, and also that a hardship may be wrought on the settlers, who depend on the moose in many instances for their winter's supply of meat, if they were compelled to take bulls whose flesh was more or less rank. The rutting season of moose, however, would appear to extend over the latter portion of October, the whole of November, and on into the early portions of December, so that if the open season is to be declared during this general period of the year at all, which from most points of view is undoubtedly the proper one, it would not appear that the considerations above referred to would be more applicable or carry more force in regard to the latter two weeks of November than in regard to the earlier portions of that month. There would be, moreover, one great advantage in having the open season during the latter two weeks of November, namely, that the weather by that time throughout the moose and deer country will almost invariably be sufficiently cold to allow of the preservation of the meat by freezing, whereas earlier in November or in October this might not always be the case. Most particularly is this point of importance to the settler and others who shoot to obtain food for themselves and families, for it is of small avail to grant them privileges in regard to the taking of big game if the weather conditions during the periods of privilege will prevent their being able to preserve the meat.

The woodland caribou, or American reindeer, is, in all probability, still more or less abundant in the extreme northerly portions of Ontario, but it would seem to have diminished considerably in numbers in the more accessible localities. The caribou, like the moose, appears to avoid the proximity of civilization, to require considerable areas of wild land over which to roam, and to move from one district to another without any very apparent reason. Large tracts of forest and wild land in this Province are undoubtedly adapted to sustaining the caribou, and contain plenty of suitable food, but from many of them it seems to have de-

parted. As a rule the caribou can be more easily approached than the moose, being neither so alert nor so cunning, but it is unquestionably a magnificent animal and a valuable asset to the provincial game resources. Its comparative scarcity in the accessible portions of the Province, therefore, renders it most imperative that every precaution should be taken to preserve it. The same remarks, therefore, in regard to the length and period of the open season for moose would apply equally to the caribou. In fact, the principal necessities in regard to the moose, caribou and deer are to have one open season for all three of them, applying equally to all parts of the Province; to restrict the killing to the males of the various species; and for the present, at least, to reduce the period of the open season for all three varieties to a maximum of fourteen days.

A matter of no little interest to the public would be the publication from time to time of statistics showing the numbers of big game taken in the course of an open season. The possession, in fact, of information on this subject by the Department would appear to be most desirable, for it would seem to afford the only reliable basis on which to found restrictive legislation dealing with this subject. Licenses to hunt big game have to be taken out by both residents and non-residents, the charge for the latter being considerably in excess of the former, and it would seem that no undue hardship would be placed on any licensee by requiring him to furnish the Department from which the license emanates with full detail of his kill. If a coupon for the purpose were attached to the license, no doubt the great majority of hunters would willingly comply with the condition, and there can be little question that the approximate statistics obtained by this means would be both useful and interesting.

Unfortunately it must be recorded that in certain portions of the Province the weight of evidence obtainable points unmistakably to the fact that considerable destruction of big game must still be attributed to the presence in the woods of lumber camps and other enterprises involving the feeding of gangs of men by private companies and individuals. As a rule it would seem that the larger concerns are not guilty in this respect, but in addition to making ample provision for food supplies for their men, issue also strict instructions to their foremen against the illegal taking of game, and that it is, in fact, the smaller concerns who are the most persistent offenders. It is perfectly apparent that in a district where big game is comparatively abundant a great saving will be effected to the timber licensee or contractor if the butcher bill can be reduced by some thousands of pounds of meat secured at little or no expense in the forest, and, indeed, there is little doubt that in some cases men are employed solely for the purpose of hunting for certain of the camps, regulations on the subject notwithstanding. The difficulty of obtaining accurate information as to such infractions of the law is considerable, for, as a rule, the camp is situated at some considerable distance from a railway, and even if the visits of the overseer could occur

with reasonable frequency, which in general they do not, and come in the nature of a surprise, the object of the visits would be known to one and all, steps would be taken to conceal all traces of malefactions, and only food of an unimpeachable character would appear on the tables during the overseer's stay. In fact it would seem that where such infractions of the law occur some steps are, as a rule, taken to guard against surprise or detection, such as keeping a supply of beef on hand and concealing the deer or moose meat at some little distance from the camp. There can be no question that it is imperative to put a stop to these practices, and the most feasible means would appear to be to employ a certain number of specially selected men, who would habitually seek employment in the woods, to engage in suspected camps; work there and acquire the necessary information; leave, having done so, on some such pretext as would actuate the ordinary lumber-jack; and, returning to civilization, place the information in the hands of the nearest overseer or magistrate, so that it could be acted upon and the offenders indicted without, as a rule, connecting the informant with the detection of the crime. It would seem, also, that where these practices could be brought home to the offending parties a very heavy fine should be inflicted on them, in addition to the ordinary fine for the illegal destruction of each separate animal. Undoubtedly if such measures were put into force a great saving of game would be effected annually to the advantage of the Province.

The Settler in Relation to Game.

A most difficult and vexed question is that of the rights and privileges of the settler in regard to game. There can be no question that the primary function of game in all wild countries is to supply food to the natives inhabiting it or to the pioneers opening it up. As a rule during the latter process there is a tendency to reckless waste, and it cannot be said that the experiences of Ontario have furnished any exception to the general rule. In consequence the inevitable result has ensued, even in those districts which are as yet still but very sparsely populated, namely, that the quantity of game of all descriptions has materially diminished. It would, however, be impossible to blame the early settlers in a new land for their prodigality, for theirs is an unusual and, in many instances, a hard life, game a necessity of existence and hunting the habitual form of recreation, while the very abundance of the game tends to obliterate their faculty for perceiving that the day of reckoning in depleted quantities of game must eventually arrive, or even of themselves acknowledging that the diminution is taking place after it has already become only too apparent.

In a country developing in civilization and increasing in population the pioneer settler still performs a service to the public which it is hard to estimate at its intrinsic value. New country is broken up,

prepared and improved, to the increase of the public wealth and to the ultimate benefit of posterity, at the cost to the settler and his family of an existence below the general standard of comfort and prosperity of the community. It would seem unreasonable, therefore, to begrudge some little advantage to these pioneers over the rest of the community in the matter of game privileges. On the other hand game is undoubtedly a public asset, which, after its primary function has in large measure disappeared, none the less continues to be of equal, if not increasing, value in its general effect on the moral and material welfare of the population, and it is evident that as the game areas and game diminish before the advance of civilization, those living on the land under conditions of average comfort, or with reasonable facilities to do so if they choose at their disposal, can no longer expect to be privileged above the general community in the matter of game, but must rest content to submit to the regulations and restrictions which are imposed on the public in the interests of the common weal. The game constitutes a public asset, and the fact that a man lives in the country instead of in a town cannot alone be held sufficient cause to warrant any exceptional claim or privilege on his behalf on the game in the vicinity. If, therefore, it may be deemed advisable to privilege a few under exceptional circumstances and for exceptional services rendered, this can in no sense be held to justify the extension of the privilege to those not so circumstanced. These matters have long been within the knowledge and consideration of the administrations of this Province, and serious efforts have been made to solve the problem in a manner which would be both equitable and advantageous. Unfortunately, however, the solution appears not as yet to have been found.

At the present time a resident of the Province is required to take out a license to hunt deer, moose or caribou, the cost of a deer license being $2.00, and that for moose or caribou $5.00. Under the former license but one deer may be killed, and under the latter but one bull moose or one bull caribou. In proportion, therefore, to the amount of flesh on these animals and the value of their hides and heads, it will be seen that the charges are by no means excessive. In the case, however, of the settler living in unorganized districts, the license fee in regard to deer is relaxed, and he is given the privilege of taking one deer for home consumption free of all charge. In 1907 this privilege was extended to settlers in certain of the organized but wild regions, but was cancelled during the course of the year 1910. The right of the settler in the unorganized districts to take one deer is not held to cover either moose or caribou, nor is it legal for him to take the deer except in the legal open season.

In regard to the system of distinguishing between organized and unorganized districts, it may be observed that in very many instances conditions of life in the former are equally, if not more, severe than in the latter and, consequently, that residents in such areas have some grounds

for complaint that they are unjustly penalized for the slight privilege of organization. The organized districts, however, even though the conditions under which the settlers live may be equally hard as those prevailing in adjacent unorganized districts, are in the main the most accessible, and naturally, therefore, the more liable to be visited by hunters during the open season. It was proved that the privilege accorded the settlers was in no small measure being abused to the undue destruction of the game and to the evasion of the bag limits imposed on hunters by law, and it would seem, in consequence, to have been deemed wise to restrict the privilege to the greatest possible extent. Unfortunately it is the case that in the wild portions of the Province it is so easy and comparatively safe for persons resident in them to break the game laws that the temptation to do so is great, and there can be little question that in these regions, whether they be organized or unorganized, if the settler makes up his mind that he requires a moose, a caribou or a deer, he will take it, whether or no he is privileged to do so by law. No means, apparently, are available to alter this condition, and it would, therefore, seem wise to face the facts as they exist and to seek some means whereby the settler in all truly wild regions may be enabled to take a sufficiency of game to meet his actual necessities, as he does at present all too often illegally, under the provisions and protection of the law. In considering a scheme whereby this may be effected the most obvious difficulties are to determine to what areas the privilege should be applied; whether or no some compensation should be exacted for the privilege; the amount of game that should be allowed to be taken; and the extent of territory the privilege should be held to embrace in each individual case.

It has already been noted that discrimination between organized and unorganized districts has been found unsatisfactory in regard to game privileges in that organization does not of necessity imply immediate or rapid amelioration of circumstances. In both cases there are to be found settlers performing the service of opening up the land and having a hard struggle for existence; while in both cases, also, there will be found a percentage who have settled in the area as a means of exploiting its timber resources and make no effort to open up or improve the land. The true pioneer class are obviously earning some special privileges in regard to game, but it would seem that the latter class can in no sense be deemed worthy of especial consideration. Similarly, under the provisions of the law, holdings in wild regions may be acquired by persons engaged during a great portion of the year in other localities and in other occupations, provided only that certain clearings and improvements shall be effected over a stated period. In the bulk of such cases the holding is acquired as a speculation, and although some small improvements have to be carried out, there is no intention on the part of the owner to reside permanently upon it. In the majority of such cases, also, the quasi settler will be in a financial position equally favorable to that of the average citizen, so that from no point of view can he rightly claim exemption

from licenses of general application. It would seem, therefore, that a *sine qua non* for privilege in the matter of game licenses should be permanent residence on a holding in a wild region, together with cultivation of the soil or the effecting of considerable improvements.

Another point in this regard that has to be considered is the question of the location of the holding. There are many instances in the Province of truly wild regions within close proximity to thriving towns or villages, and where in general, if the settler's lot is a hard one, it is more due to himself than to circumstances connected with his surroundings. One, if not the only, object in granting exemption is to allow of the settler and his family obtaining the food necessary for existence, which could be obtained practically in no other way owing to the location of the holding, or else, which the settler could not afford to purchase owing to his straightened circumstances. In the case of settlers in wild regions living in the vicinity of towns and villages, food supplies can often be obtained with comparative ease, and the wherewithal to purchase them should usually be forthcoming if the settler exploits his land to advantage and avails himself of local facilities to work and earn money like the average individual. There can be no advantage in allowing the privilege in any sense to degenerate into an incentive to laziness, and it would seem, therefore, that in instances of this nature these matters should be taken into consideration in determining whether or no the settlers in the locality should be granted the privilege.

Beyond the general principles as above enunciated there would seem to be no means of devising any cast-iron rule for general application by which it could be determined to what areas the privilege should apply. In fact, arbitrary delimitation has, as already noted, proved highly unsatisfactory. Consequently, the case of each district should receive individual attention, and decision in the matter must plainly rest with the Department concerned. It is to be observed, however, that various Departments maintain officers at different points throughout the Province in addition to that of Fish and Game, and under a proper system of interdepartmental co-operation no difficulty should be encountered by the Department of Fish and Game in securing fairly accurate information as to the conditions prevailing in any particular district by this means, and further, there are in almost every case to be found responsible citizens living in the general district both able and willing to furnish reliable information as to the conditions existing in the remoter and wilder sections of the locality.

In regard to the question as to what compensation might justly be expected from the settler in return for the privileges granted him in the matter of game, it is to be noted that under the present system nothing at all is required of him. It cannot be claimed, however, that the system has worked well or that the settler has been educated to esteem the privilege at its true worth. One of the chief difficulties in the perpetuation of big game over a wide extent of territory is to form an accurate

idea of the numbers which annually are being slaughtered, and yet without such information suitable legislation can only by hazard be enacted. When a license is in force, it is plainly feasible and advantageous that the licensee should be required to furnish information as to his kill to the Department concerned, so that the authorities may be advised as to the numbers of any particular variety of animal killed during any one open season. It can scarcely be denied that such information should be in the hands of the authorities, and seeing, therefore, that no small percentage of the big game annually slaughtered in this Province meets death at the hands of some settler, provision should be made to obtain figures of the kill effected by settlers as well as of that effected by the ordinary hunter. It is, moreover, to be observed that the possession of a permit, even though that permit costs little or nothing, is calculated in some degree to impress the holder with the extent of the privilege accorded him, and the trouble to the settler in obtaining such a permit is more than offset by this advantage. Pecuniary considerations, however, will often largely influence the value attached to any particular article. It would seem, therefore, that where the settler is to be granted a privilege, not only should he be required to have in his possession a permit granting him the privilege, but that he should be required to furnish statistics of his kill to the Department before such permit is renewed each succeeding year, and further, that to enhance the value of the privilege in his eyes and to educate him to its responsibilities, as well as to cover the cost of the issuance of the permit, some small registration fee might also well be required of him. The actual amount of such fee would not appear to be of material importance, provided only that it was small, and 25 to 50 cents should be amply sufficient for the purpose. In addition to these things it might, perhaps, also be required of the settler that he check, as far as possible, all illegalities and report all infractions of the law that come under his notice to the proper authorities at the first opportunity, but in any case he should be given to understand that any infraction of the game law on his part, or should he connive at or abet such infraction on the part of others, not only will disqualify him or any member of his family resident with him from obtaining the renewal of such permit, but will be likely to influence the authorities in the matter of renewing the permits of his neighbors in the district, or, in other words, that the exemption accorded him is a privilege and in no sense a right appertaining to his mode of life or to the locality in which he happens to live. Where, indeed, in any district offences against the game laws or abuse of the settlers' privilege were found to be at all common or numerous, it would seem that all settlers' permits should at once be cancelled, regardless of the hardship entailed on, perhaps, one or two law-abiding citizens therein.

In the matter of the issuance of permits to settlers, the authority should plainly be made as broad as possible consistent with due caution, and be vested in such officials as magistrates, overseers, provincial con-

stables and the clerks of the organized districts nearest to the areas which have been selected for privileged treatment by the Department, but it should be clearly impressed on each such official that not more than one such permit was to be issued to a family residing together, and that no permit was to be renewed until such conditions as might be required of the settler had been discharged.

The question next arises as to what amount of game the settler should be entitled to kill under his permit. Attention has been called to the fact that while undoubtedly moose, caribou and deer may occur together or in adjacent localities, this is not the rule, but rather that where one is abundant the others will be comparatively scarce. In regard to moose and caribou, to the taking of which the settlers' permit does not at present extend, it is plain that if either of these is the animal chiefly to be found in the district, the privilege extended to the *bona fide* settler should include these animals. The great size of the creatures should preclude any necessity of the settler requiring more than one in the course of a winter, if care is taken not to waste the meat, for it may here be observed that whatever the privilege extended to the settler he must in no way be allowed to take game other than in the legal open season. The moose or caribou will produce an enormous amount of meat, and if shot in the open season, when the weather is cold, the meat can easily be maintained in good condition throughout the winter. To shoot these large animals in the summer is bound almost to entail the waste of an enormous amount of meat, so that for this reason, if for no other, the taking of deer in the summer months must be most rigidly suppressed. Moreover, it is in the winter especially that the settler can be expected to feel the pinch of necessity, and it is to meet this condition that the privilege is accorded him. In the summer months the fruits of his own labor should produce him sufficient upon which to live, and in any case the practically free gift of so great and valuable a creature as either a moose or caribou cannot but be considered an ample discharge of its duties in this direction in regard to the settler on the part of the general public. While, therefore, the privilege extended to the settler might well include moose and caribou, one specimen of either one or the other variety, but not of both, must be deemed ample for his needs.

In regard to deer the recent reduction of the legal limit to one, instead of as formerly two, will undoubtedly have effected a hardship in the case of some settlers should they have abided by the law. Two deer will afford a reasonable amount of meat for a settler's family during the winter months, but one deer, in the case of fair-sized families, at least, is bound to reduce the daily ration to very small proportions. Undoubtedly even this meagre allowance will be considered a great help, but it would seem that if there is a real necessity for granting a privilege to the settler at all, that privilege might well be enlarged to meet the necessities of his case to the full. Where, therefore, the settler kills only deer under his permit, it would appear that he should be allowed to take two, and

further, also, that he might well be allowed to take one deer in addition to either one moose or one caribou.

There can be no necessity to legalize the taking of small game by the settlers, for the settlers, who live in the wild regions, know more or less the location of such small game as there is in their vicinity and are in a position to take the utmost advantage of the legal open seasons. Consequently, those restrictions which are placed from time to time on certain species of small game should be observed by the settler, and he should be made to realize that offences in regard to small game will disqualify him from any privileges in regard to big game.

Finally as to the extent of territory over which the settler should be entitled to shoot the game allowed him by privilege, it is evident that some limitation should be imposed in the interests of the public, for inasmuch as there will only be certain localities in which it is deemed desirable to grant settlers' permits, if no limitations were made the settler would on occasions be found hunting in areas for which no such permits were granted, and the residents therein would have just cause to complain. In almost every case where it is at all desirable to grant the settler special privileges in regard to game one variety or another will occur in comparatively close proximity to his holdings. It remains, then, but to determine an area wide enough to suit all cases, and there can be little question that a radius of ten miles from the habitation of the settler should be amply sufficient. It is not to be expected, of course, that this restriction could be very rigidly enforced, but it would serve to call the attention of the settler to the importance attached by the authorities to the privilege accorded him, and at the same time would facilitate the work of the game wardens in dealing with patent infractions of the privilege, such as where the settler shoots for other persons and for their benefit in regard to meat at some considerable distance from his home. In this connection, also, it may be observed that the settler when hunting should be required to carry his permit on his person.

The Indian in Relation to Game.

One of the principal factors in the destruction of game is the Indian living in the wilder regions. Considerable reservations have been set aside for the Indians in various portions of the Province, and there is no doubt that within the limits of such reservations the Indians are entitled to hunt game of all descriptions when and how they please. These reservations, however, in some cases are not sufficiently wide to provide for all the requirements of the Indians in the matter of game, or else have been more or less depleted of the game in them by the Indians themselves, and the result has been that in various portions of the Province the Indians have hunted, fished and trapped at all seasons of the year on Crown lands or water without the limits of their reservations. The rights of the Indians in this connection would appear as yet

Indian Encampment, Showing Wigwams, Rainy River District.

Indian Graves, Rainy River District.

not to have been definitely settled by the authorities. It is not the purpose of this Commission to enter upon a discussion as to the treaty rights and privileges of Indians, but merely to call attention to certain features of this problem which are of no little importance to the Province.

In the wilder regions of Ontario the Indians are not, as a rule, addicted to agricultural pursuits and depend for their food very largely on what they can succeed in securing in the way of fish and game. In the main, also, it may be said that the Indian is not an energetic person, excepting when actually engaged in the pursuit of some wild creature, nor as a rule one possessed of great perspicacity in financial matters. Consequently, although many indians in these regions will at times undertake some form of labour, such as guiding or the moving of merchandise, for which they receive good pay, and will, also, sell the results of their trapping operations which not infrequently net them considerable sums, in general they are loath to undertake prolonged or steady work, and what money they make disappears with astonishing rapidity, so that during a great portion of the year food is with them a question of no little moment. Although doubtless there could be adduced many instances to the contrary, as a rule the Indian would not appear to be of a wasteful disposition in the matter of food, especially in regard to that secured by hunting, so that on the whole it may be assumed that what game the Indian does take for his own purposes is at least made use of. If, therefore, the depredations of Indians were confined to their own requirements, there would, perhaps, not be much cause for complaint. Unfortunately, however, this is far from being the case. In the wilder portions of the country there are in many localities to be found individuals only too willing to purchase from Indians such game as the law forbids their taking themselves, and so long as the Indian can take game with impunity during the close seasons on public lands, so long would it seem inevitable that there should be a market open to him; in fact, a direct incentive to him to break the laws which apply to the white man.

Fish, game and fur-bearing animals are obviously an exhaustible asset, and restrictions in regard to their taking have been necessitated owing to their diminishing numbers. If the Indian is enabled to enter any area and take what game he chooses to any extent he desires, not only is it apparent that the effect of the restrictions will be largely discounted in that area, but that the white inhabitants of the area will have reasonable cause for complaint and indignation. Various instances of this unsatisfactory state of affairs are readily to be found in the Province. The beaver, which had become very scarce throughout Ontario, was placed under protection for a period of years, which protection is still in force. The Indian, who can take the beaver if such exists on his reservation and, moreover, is somewhat partial to its flesh, will not and has not been deterred in many instances from so doing on public lands, mainly for the reason that he seldom encounters any difficulty in dis-

posing of the skins at a remunerative figure. In fact, the value of the pelt is a direct incentive to him to take all that he can secure, with the consequence that where under normal conditions he would have taken but one or two of a family, his greed now leads him to exterminate it, for he is naturally improvident in regard to the future. Speckled trout may not be netted and are jealously preserved for sporting purposes. The Indian appears on some of the finest waters and proceeds to place his nets in the channels or on the spawning beds, removing as many fish as he deems necessary and undoing in a very short time all the good which has been effected by protection and a close season. The moose and deer may be fairly scarce in a locality, and the local resident may be eagerly awaiting the approach of the open season in anticipation of hunting some specimen which has taken up its quarters in the vicinity of his habitation. An Indian passing by while the creature's horns are still in velvet or it itself is fat and unsuspicious, shoots it with supreme unconcern of laws and regulations before the eyes, perhaps, of the resident, and proceeds to regale himself upon it and remove such portions of the carcass as he requires. The partridge, owing to its growing scarcity, was until the last season on the protected list throughout the year, and even now is in no such abundance that anywhere there can be said to be too great a supply in comparison with the local demands or needs of sportsmen. The appearance of a family or more of Indians in a neighborhood will as a rule be coincident with the disappearance of the coveys. Wild duck and other birds are afforded protection during the season of the year when they are nesting or caring for their young. The Indian is no ultra-sentimentalist, and should he feel so disposed will as lief shoot a mother bird on the nest or with chicks as any other. The list could be indefinitely prolonged, but enough has been said to show that the present situation is, to say the least of it, unsatisfactory, and that some effort should be made without delay to come to an agreement or arrangement on the matter which will be both equitable to the Indians, fair to the public of the Province, and as far as possible in harmony with the general principles of conservation. In any case it must be apparent that the present situation demands that the whole question of the rights of Indians should be cleared up once and for all in regard to game on public lands, for the matter will plainly have to be faced some time, and it would certainly seem that the sooner this is done the better will it be in the interests of law, order and administration.

Whatever the decision may be in regard to the rights of Indians in the matter of game on public lands, it must be evident that it should be made a most serious offence, punishable with severe penalties, for any white man to pay or incite an Indian to violate the white man's game law in any respect, or to take advantage of such violation in the slightest degree. In fact, imprisonment together with a heavy fine would appear none too severe a punishment for the offence. It is evident, also, that no injustice would be done to the Indian by making him liable to

An Indian Dog.

A Group of Indians, Rainy River District.

imprisonment or fine where he barters or attempts to barter any form of game proscribed by the white man's law or during the period when such game is out of the legal season, except and only within the limits of his reservation and there only among his own kind. The principle of allowing Indians to do so in respect to game, fur or fish would not only be a manifest injustice to the general public and an incentive to general disregard of the laws, but a palpable absurdity into the bargain. At the present time the Indian's chief depredations are undoubtedly due to cupidity born of the knowledge that he can dispose of his spoils to the white man. A few instances of really rigorous punishment applied to both white man and Indian concerned in such a deal would undoubtedly go a long way to check the present extent of this evil. A method of dealing with the question of trapping will be discussed in a succeeding section, but in regard to game and fish it may be observed that the most satisfactory manner of disposing of this problem, from the point of view, at least, of economy in natural resources, would be to have one law applicable to white man and Indian alike in regard to open seasons and bag limits on public lands, with the privilege to the Indian of securing a permit to take all such game as the law allowed free of charge. There can be little doubt that the special privileges in regard to big game mentioned in a previous section of this report in regard to the poor settler in wild regions should be amply sufficient to provide for the wants of any Indian family also during the winter months, and in the summer the Indian family, like the family of the settler, should be able to subsist comfortably on the proceeds of the winter's trapping or other work, on such products of the soil as their energy causes to be produced or which are to be found growing wild in the neighborhood, and on the fish which they are so adept in catching.

Another point to which attention has to be called in regard to Indians in relation to game is that within or in the immediate vicinity of certain of the provincial forest reserves there are Indian reservations and in one instance, at least, that of the Quetico Forest Reserve, it would appear that the Indians habitually hunt and trap therein. It is to be observed that if the game in a reserve is to be hunted, one of the principal values of such reserve will disappear, and further, that if trapping is to be conducted in a reserve, it would appear that, as previously noted in this report, the profits should accrue to the public to offset the charges for the protection of the reserve. Whether or no it is any more feasible to prevent Indians hunting and trapping in a provincial forest reserve than on any other public lands is a question which will have to be decided upon by the proper authorities, but at least it must be apparent that if the provincial reserves are to fulfil their proper functions in regard to game of all descriptions, the greatest efforts should be made to keep the hunting Indian out of them, or at least to limit his operations to the removal of such fur-bearing animals as may be deemed advisable by the authorities under the supervision of government officials and for

the benefit of the public treasury. It would seem, therefore, that were it possible to do so, it would be most advisable to make fresh treaties with the Indians in these localities and transfer them to other reservations at a distance from the reserves.

One, point, however, strongly in favour of the Indian and half-breed must be mentioned, namely that when out of reach of the illicit purveyor of strong liquors he is not only in most instances simple and trustworthy, but from his very methods of existence a most proficient woodsman, in the sense that paths and tracks of the forest stretch out before him like an open map should he only once have traversed them, and that the ways and secrets of wild life are known to him from his early childhood. Perhaps, therefore, it might be possible to take advantage of these traits in the Indian character, alike to the benefit of the Indian and of the general public. In the less accessible reserves, and, in fact, in the remoter sections of the forest area which are now or will be shortly patrolled by government rangers, there would seem to be an opportunity of turning the Indian to good account. Under adequate supervision there is no apparent reason why he should not become an efficient ranger. Starting with a great initial advantage over the average white man in the matter of woodcraft, he is equally, if not more, expert than the average white man as a canoeist also. He is not afraid of being alone in the woods and can travel from point to point rapidly, dispensing with much of the impedimenta which would be considered indispensable by the ordinary white ranger. It would, indeed, but be necessary to explain to him the nature of the duties he was expected to perform and to make arrangements for insuring the supervision that in any case would be indispensable. Well supplied with food the necessity or temptation to hunt would disappear, for as before observed the Indian is not as a rule wasteful in regard to provisions. Perhaps the main objection to employing the Indian in this fashion would be held to rest in confiding into his hands the authority of ranger and warden in regard to white men working in the woods. In as much, however, as he is no great linguist, and uneducated to distinguish between the various classes of white men, it would seem that he could be counted on to discharge his duties without fear, favour or affection. Two instances, at least, in this Province of the employment of Indians for this purpose have proved thoroughly successful, and it would appear that in the more general application of the principle might be found a solution to the many difficulties and problems connected with the Indians in the wilder regions.

Recommendations.

Your Commissioner would, therefore, recommend:—

(1) That a resident hunting license of $1.10, as recommended in the Interim Report of this Commission, be imposed without delay for the privilege of hunting any species of game in the Province for which no

license is at present in force; that those persons recommended to be exempt from the operation of such license be required to obtain a permit in lieu of the license; and that it be declared illegal to be in the possession of firearms in the forests or on the wild lands belonging to the Crown during the open seasons for any game whatsoever without such license or permit, unless such firearms shall have been sealed with a government seal.

(2) That all holders of hunting licenses or permits whatsoever be required as a condition of obtaining the same to furnish the Department, on a form provided with the license or permit for that purpose, with statistics as to the game shot or killed under such license or permit, and that information based on these returns be given to the public yearly as to the amount of game of each species killed in the Province.

(3) That the open season for moose and caribou throughout the Province be limited to two weeks and be made coincident with the open season for deer.

(4) That the shooting of does be prohibited in the future.

(5) That *bona fide* settlers in the more newly settled regions of the Province, whether in organized or unorganized districts, domiciled on their holdings generally throughout the year and effecting actual improvements in the same or subsisting chiefly on the agricultural products of such holding produced through their own efforts, be, at the discretion of the responsible Department, granted permits to the extent of one only to each family resident together authorizing them to take, during the open season for such game, one moose or one caribou and one deer, or else two deer, for the use of themselves and family, provided only that the said permit be valid only over a radius of ten miles from the habitation of the settler; that no trading in the game secured under the permit be tolerated; and that in consideration of receiving a permit the settler be required to pay a registration fee of 25 cents, and to furnish the Department, on a form provided him with his permit for that purpose, with statistics of the game taken by him under such permit.

(6) That a settler's permit as above recommended be renewed only after the required conditions shall have been properly executed; that any infraction of the game laws on the part of the settler or connivance by him at the same on the part of others be deemed sufficient cause for the immediate cancellation of his permit and for his disqualification from obtaining such a permit for a period of five years; that such disqualification shall be held to apply to all members of his family or other persons resident with him; and that where infractions of the game laws become at all numerous in any district for which such permits are issued, all such permits issued for the district be cancelled and not renewed for a period of five years.

(7) That the settler be required to have his permit on his person when engaged in hunting.

(8) That special steps be taken to prevent the use of deer or moose meat, illegally taken, in lumber or other camps located in the woods, by engaging the services of reliable men to work in suspected camps and report infractions of the law to the proper authorities, and that a fine of $250.00, in addition to the present legal fine for each animal illegally taken, be imposed on the licensee or contractor responsible wherever it can be proved that moose, caribou or deer meat or other game has been illegally supplied to the gangs or working parties employed by him.

(9) That any white man inciting, abetting, paying or causing an Indian to violate the game laws in any respect or taking advantage of any such (presumptive) violation on the part of the Indian be made liable to a fine of not less than $100 in addition to such other fines or penalties as would be imposed by law on account of the game or pelts thus secured.

(10) That, if possible, it be declared a crime, punishable by imprisonment or fine, for an Indian to barter or attempt to barter any game whatsoever, including the pelts of fur-bearing animals, taken during the legal close season for such game as may be in force in the Province, except and only among his own kind within the limits of an Indian Reservation.

(11) That, if possible, steps be taken to have the game laws made applicable to Indians in so far as all public lands and waters are concerned; that under such conditions the Indians be accorded the same privileges as recommended for the *bona fide* settler; free of all charge and conditions other than that they be required to secure a permit to hunt on public lands, to have such permits on their persons while hunting and report to the Indian Agent what game is taken under such permits; and that steps be taken to secure from the Indian Agents statistics of the game slaughtered by the Indians under such permits.

(12) That steps be taken to prevent the Indians hunting in any of the Provincial Forest Reserves.

(13) That where Indian reservations are located in or in the vicinity of provincial forest reserve steps be taken, if possible, to come to some arrangement with the Indians inhabiting them whereby they shall surrender such reservations in return for lands at a distance from such reserves.

(14) That the experiment be made of still further developing the existing policy of employing a few Indians as fire rangers in the provincial forest reserves.

Fur-Bearing Animals.

In its fur-bearing animals the Province of Ontario possesses an asset of enormous value, but the ever rising market worth of the pelts of practically every species, the growth of population and the increasing accessibility of many of its wilder regions have tended to and resulted in a great diminution in the numbers of nearly all varieties. So much

A Scene in the Quetico Forest Reserve.

so was this the case in regard to the beaver and the otter that it was found necessary to prohibit altogether the taking of these animals for a period of years in order to save them from extinction, which restriction is still in force, and it can hardly be doubted that some method of exploiting these resources generally on more economic principles than those at present prevailing should be sought and put into effect if similar drastic measures are not to become necessary to ensure the perpetuation of most of the other species. The variety of valuable fur-bearing animals in the Province is great, including beaver, otter, mink, skunk, racoon, ermine, marten, fisher, lynx, fox, and muskrat, and if due precautions are taken it should be possible to perpetuate all these valuable animals, in spite of the opening up of the country, for a great many generations to come. Most species are comparatively prolific and this fact is alone sufficient to prove that only most extravagant methods of exploitation will result in their depletion. The effects of protection are almost invariably rapid and wonderful in regard to them as is well instanced by the case of the beaver, which a few years ago was almost extinct in the accessible portions of the Province, but which since the prohibition of taking has reappeared in considerable numbers in certain localities; to such an extent, indeed, that from some quarters complaints have been received that they are becoming too numerous and effecting damage owing to their propensity for damming creeks and other waterways. Instances of such complaints are, however, rare and there can be little question that it will be the part of wisdom to afford protection to the beaver against the operations of the ordinary trapper for many years to come, for the houses constructed by these creatures render them peculiarly easy to locate, and once located it is a simple matter to exterminate a whole family. Indeed, it would not seem unreasonable to suggest that where in any locality the beaver are found to be too numerous, the work of thinning out their numbers should be undertaken by the Provincial authorities for the benefit of the public treasury, and that, in fact, the beaver should be regarded throughout the future as a perquisite of the Crown, and protected and exploited accordingly. The beauty of the beaver's fur, its durable qualities and the difficulty of securing a supply at all proportionate to the demand ensure that, at least, little if any diminution will occur in the value of its pelt for many years, and if the government undertook its exploitation, stamped all pelts with a government mark and took only pelts of mature beaver that were in prime condition, it is not to be doubted that Ontario beaver skins would become famous throughout the world, or that a very great revenue would accrue to the Province through this means. The danger of the extermination of the beaver, where they may be taken by one and all, has been clearly demonstrated and established by disastrous experience. The varieties of fur-bearing animals in the Province are numerous. It would seem, therefore, that not only would no hardship be done to the average trapper should the Government undertake such an enterprise,

but that it would be the best means of ensuring the perpetuation of the beaver and of deriving the greatest possible benefit from its existence for the public.

The value of fur rests not only on the beauty and durability of the pelt, but in a large measure, also, on its comparative abundance. Some pelts, indeed, which are very scarce, fetch almost incredible sums on the open market. Nevertheless there can be little question that the sum total of the trade occurring in the pelt of the least individual value, that of the muskrat, is going, or has come, to outstrip in value that of any other fur-bearing creature found in the Province. The muskrat therefore is worthy of especial consideration. Like many other fur-bearing animals it is afforded some measure of protection, the taking of it between May 1 and December 1 being prohibited, as likewise the shooting of it during the month of April and the spearing of it at any time, while it is also enacted that the muskrat house may not be cut, speared, broken, or destroyed at any time. The creature itself is about four times the size of an ordinary brown rat, with a tail, compressed, thickest about the middle line and tapering to a rather acute point, about two-thirds as long as the head and body. Except the beaver no other fur-bearing animal of the Province leads a more aquatic life. Its feet are specialized for swimming; its fur waterproof; and its tail serves as an efficient rudder. The muskrat derives its name from the peculiar musky odour given off chiefly by its large perineal glands, which odour to some extent pervades the whole skin, particularly in the summertime. While chiefly nocturnal in habits the little creature, where seldom disturbed, may be seen at work in bright sunlight, especially when constructing winter houses. These houses are for the most part constructed of rushes, grasses, roots and stems of aquatic plants, heaped up without orderly arrangement until the dome-like top rises from 18 inches to 2 or 3 feet above the water. The mud often seen on the outside of the houses seems to be collected accidentally with the roots. In the portion of the house above water an interior chamber is constructed from which two or three passages lead downwards to points below the frost line in the water. These houses are mainly for winter shelter and the storage of food, and as a rule are inhabited by one family only, though sometimes, when ice or frozen ground prevents the use of burrows, a larger number will temporarily find accommodation in them. In banks of streams and ponds the muskrats will construct burrows, the entrance usually being under water at a sufficient depth to prevent their being closed by ice, the burrows extending from 10 to 50 feet into the bank, and terminating in a rough chamber in which sometimes is to be found a nest composed of dried vegetation. When burrows are available the muskrat occupies them in winter and summer, but where water is shallow in ponds and marshes the entrances will often be closed by ice and the creatures forced to make use of the houses. As cold weather approaches they become very active, building, adding to their houses, deepening the

channels leading to the burrows, and they do not hibernate during the winter.

There would appear to be considerable diversity of opinion in regard to the breeding habits of the muskrat, but the bulk of evidence would tend to show that normally there are three or more litters in the course of a year of an average of from three to eight, and that the young of the first litter of the year, which arrive early in the spring, themselves breed in the fall of the same year, for the creature must be unusually prolific to account for the wonderful replenishment of marshes during the close season which have been depleted by vigorous trapping.

The muskrat is principally herbivorous, devouring the roots, stems, leaves and fruit of aquatic plants and being partial to nearly all garden vegetables. It will, however, on occasions take animal food, and in some localities during the winter months feeds largely on mussels and such slow-moving fish as the carp, which bury themselves in the mud at this season of the year. Cases, also, have occurred where they have been known to attack trapped or wounded members of their own kind and are said, when hard pressed for food, to devour the weaker members of their own community.

In the raw state the fur of the muskrat is dense and soft, not unlike that of the beaver though the pelage is shorter and less close and somewhat inferior in durability. The colour varies with the season and locality and the fur is in primest condition in the early spring. The earliest demand for muskrat skins was for the manufacture of so-called beaver hats, and when replaced by silk in the manufacture of hats, they next became popular as imitation of sealskin. The modern fur dresser and dyer has, however, found means of imitating nearly all the most costly furs with that of this animal and a continuous and great demand for these pelts on this account alone has been created. The London market affords a good idea of the growth of this demand. From 1763 to 1800 the total number of skins imported and sold in that market was 2,831,-453, an average of less than 75,000 yearly. From 1851 to 1890 inclusive the importations were approximately 99,893,591, or a yearly average of about 2,500,000, while the average sales of recent years have been over 4,000,000 per annum. Prices are largely based on returns from the London auctions, although the number of pelts retained for home use is increasing rapidly, and it is unquestionable that the prices show a tendency to rise steadily. In Baltimore, for instance, the buyers paid 35 cents apiece in 1909 for brown skins ungraded, whereas in 1910 they were paying 65 cents for the same class skin, while in Toronto in the spring of 1909 a prominent firm of furriers was paying 45 cents a skin and in the the spring of 1910, 75 to 80 cents a skin.

The muskrat is peculiarly defenceless in the wintertime when it is congregated in its burrows and houses, and although the law explicitly forbids the breaking into houses, it is unfortunately the case that this regulation is all too frequently disregarded in a great many portions

of the Province with the result that not only are quantities of the little animals left without food and shelter to perish without profit to mankind, but in many instances whole families are wiped out to the detriment of natural reproduction. It would seem, indeed, that the present open season is altogether too long, and occurring as it does just when the greatest harm can be done, is productive of an undue and economically wasteful slaughter. It has been noted that the skin is primest towards spring and that the value of the trade in this fur is steadily increasing. The creature itself will thrive in ponds, marshes, canals and streams, surrounded more or less by civilization and from which other fur-bearing creatures will have largely disappeared. It is apparent, therefore, that with an eye alike to the present as to the future the utmost precautions should be taken to insure the perpetuation of an abundant supply of this valuable animal. There can be little doubt but that vigorous and systematic trapping over a far shorter period than that now allowed by law would be sufficient to produce all the rats that should be taken, having regard to the maintenance of the supply, and it would seem, therefore, not only that the season should, in the interests of the trappers themselves, be considerably curtailed, but that it should occur at that season of the year when skins are primest and the least irreparable damage is likely to occur. So long, indeed, as trapping muskrats is permitted throughout the winter months, so long will it be exceedingly difficult to enforce the regulations in regard to the breaking open of the houses, while if trapping is prohibited during the major portion of the winter there will be no excuse, or at least very little, for the hunter to be visiting the grounds with his traps. Consequently it would appear that the open season for muskrats could, without undue hardship to the trappers, without materially diminishing the annual catch, and at the same time in the best interests of economical conservation, be fixed from March 16 to April 30, both days inclusive.

One objection that would in all probability be made to the suggested alteration in the dates of the open season for muskrats is that the mink is often to be caught in approximately the same localities. Undoubtedly this is the case. The mink, whose beautiful fur causes it to be much more highly esteemed than the muskrat, is widely distributed throughout Ontario, but it is to be observed that in the more densely populated sections of the Province, in those areas, in fact, where the muskrat will be the most vigorously and persistently hunted, and where in consequence the greatest danger of extermination will occur, the mink has become comparatively scarce. Trapping operations, therefore, for mink in such localities would not in all probability be very extensive even were the present open season for mink, December 1 to May 1, left unaltered, for to trap for this creature alone would not be a very profitable undertaking and it is more than probable that a few instances of rigorous punishment in regard to the illegal taking of muskrats under such circumstances would result more or less in the abandonment of such operations

where muskrats were plentiful. That this should tend to an increase of the mink in these areas cannot be doubted, and the fur of this creature is so valuable that this could not but be considered a distinct advantage. The muskrat and the mink are at the present time classed together in the matter of an open season and it might appear that the curtailment of the season sugested for muskrat could with advantage be applied to mink also, but the cases are not analogous. Undoubtedly the numbers of the mink are decreasing and shortening of the season might be advantageous, but the fur of the mink is primest during the early winter and the question in regard to mink is rather whether it would not be more advantageous to advance the season for mink to include the two latter weeks of November than to prohibit its taking during the early winter months. In any case, however, it is apparent that even if some objections to the suggested dates for the muskrat season were made on account of the trapping of mink, they should not be allowed to carry weight for the reasons that the change would be of the very greatest benefit in regard to the maintenance of the supply of muskrats; that in proportion to the amount of damage now effected in the ranks of the muskrats by the prolonged open season the value of the mink fur secured in such localities is but a trifling consideration; and finally that the proposed change should tend to increase the numbers of mink, at least in the more populated sections of the Province.

Trapping.

In the previous section attention has been called to the general diminution in the numbers of fur-bearing animals, and it would seem that this diminution cannot but in large measure be attributed to the system of trapping prevailing in the Province. Many years ago, when the Hudson Bay Trading Company was practically the only firm trading in furs on a large scale, the maintenance of the supply of animals was more or less assured owing to the fact that the individual agent or factor in charge of a station or district viewed with concern anything that would tend to a lessening of his receipts, and consequently, if the fur of any particular variety of animal showed signs of becoming scarce in any district, measures were as a rule taken to discourage its capture and thus afford the species an opportunity to recuperate. The opening up of the country, however, brought in its train the inevitable competition, and numerous firms started in to exploit the fur in opposition to the Hudson Bay Trading Company with the result that a ready market was at all times open for almost any variety of fur, individual interest in the maintenance of the supply gave way to rapacity and greed, and precautionary or conservation measures passed from the thoughts of one and all engaged in the business, becoming, in fact, only feasible of application through the agency of the crown. Far and wide has the competition forced its way until even in the most northerly extremes of provincial

territory it is now in full swing, and in consequence, throughout the length and breadth of the Province fur-bearing creatures are relentlessly pursued without much regard to age and without consideration of dwindling numbers or the laws of reproduction, except and only in such cases as those of the beaver and otter, where the state has intervened to save the animal from extermination. In regard even to these protected animals the rights of the Indians, who in the north lands at least are in the majority among trappers, to take these animals at their pleasure and even to dispose of their pelts to the white man, have not as yet been definitely disposed of. In view of such a situation it is small wonder that the number of fur-bearing animals is steadily diminishing.

Another noteworthy feature is that this great natural resource, this vast and valuable public asset, has been allowed to be exploited to the huge benefit of private individuals and firms without contributing more than an insignificant pittance to the public revenue. At the present time a fee of $10 is charged to non-residents for the privilege of trapping, but no charge whatsoever is made in the case of trappers, buyers or dealers, resident in the Province. It would, indeed, seem that in this state of affairs there lies a distinct injustice to the public, for the great profits that are made in the taking and disposing of furs are only accumulated at the expense of the property of the public.

In seeking for a remedy to the general situation the first consideration must plainly be the conditions under which the actual trapping is carried out. In this regard it is to be observed that trapping affords a means of securing an income sufficient for the year in a comparatively short space of time and with comparatively little effort. On the other hand the extent of territory that must as a rule be covered to secure numbers of the animals living in the forests precludes the probability of one man earning in average years very great sums by this means, while the uncertainty of the measure of success and the conditions of life under which the operations are prosecuted tend to lessen its attraction to the majority. Consequently, it has come about that the white men engaged in the ordinary trapping business in the forest areas are either the settlers in those localities, who avail themselves of this opportunity for obtaining cash either in preference to engaging in lumbering operations or because no opportunities to do so are open to them, or else those from the villages, settlements and towns who by preference select the life rather than engage in other more steady occupations. Of this latter class it may safely be said that in general their moral calibre is not high or their value to the community of much account, and that, as a class, they are by no means deserving of the privilege of exploiting public property free, gratis and for nothing. It is to be noted, also, that the average moral standard of these men is not sufficiently high to encourage the belief that the majority could ever be relied on to obey the laws in regard to the taking of animals so long as any possible channels for the disposal of illegally taken pelts remained open to them. In such cases,

therefore, at any rate a license fee should be exacted for the privilege of trapping.

In regard to the settler, it may be observed that it requires but small labour and but little good fortune for such of them as engage in trapping throughout the winter to catch fur sufficient to net them sums considerably in excess of $300, and, therefore, it could not be accounted a hardship if a small percentage of this sum had to be paid to the government for the privilege of undertaking trapping operations.

In the case also of the trapper, operating from towns or villages and chiefly interested in the capture of muskrats, plainly it would only be reasonable to expect from him some compensation for the profits accruing to him through the destruction of wild animals. No little trapping of muskrats is, of course, carried on by lads from farms and villages, but the value of the skins, as quoted in a previous section, is sufficient proof that those who wished to trap muskrats could well afford to pay a reasonable fee for the privilege of doing so on public lands.

There remains, then, but the Indian to be considered. The nature and habits of the Indian throughout the great bulk of the Province tend to prevent his entering upon the generality of those occupations which afford a livelihood to the white man. His domain is pre-eminently the woods; his craft, that of hunter, trapper, and woodsman. In general but small advantage accrues to the community through the existence of an Indian, other than through those functions which he can discharge in his native element, the woods, while, as before observed, the pursuit of trapping is not in general calculated to attract the better class of white man in the wilder regions to undertake it, but on the contrary rather to serve as a means of gaining a competency for the shiftless and lazy. It would, therefore, appear that while there can be no great advantage in encouraging the white man to undertake trapping as a sole or chief means of livelihood, such advantage would exist in the case of the Indian, for not only would he thus be made to contribute materially to the public welfare, but his energies would be applied in the direction most suited to them. Consequently, even though a license fee might with advantage be imposed on all other residents of the Province for the privilege of trapping, the Indian should remain exempt from such license fee, and be given a permit to trap free of charge.

A great many of the illegalities perpetrated in connection with the fur-bearing animals are directly to be attributed to the presence throughout the country of numbers of pedlars and small traders only too willing to purchase all that they can secure in the way of fur no matter where, when or how it may have been secured. It cannot be claimed that the presence of these men in the wild lands is of material advantage to the community, for by their methods of trading not only do they encourage lawlessness, but add, also, materially to the difficulties of the reputable dealers in obtaining furs. It is plain, moreover, that but slight control can ever be exercised over them, for they have no stationary place

of business and can readily slip unobserved across the provincial borders, should they so desire, with an accumulation of illegally taken pelts. If, therefore, a license fee were placed on fur buyers sufficiently high to deter the majority of these persons from purchasing a license, it would apparently not only be in the best interests of the public, but of the legitimate fur trade also. There can be no question that if the trapper is licensed, so also should be the buyer of raw or undressed furs, for the latter, in the main dealing with furs on a much larger scale than can ever the individual trapper, will make correspondingly greater profits. In the case of the buyer, also, it is to be remembered that dealing in raw and undressed furs he takes his profit for no other service than that of passing them on to those who will improve them, and that the profits thus accruing to him are at the expense of a natural resource which is the property of the public. It would seem, therefore, that not only should the buyer of raw or undressed furs be licensed, but that the license fee charged him should be sufficiently high to prevent the great majority of the lower class pedlars from purchasing such a license. It could not, of course, be expected that non-possession of such a license would either altogether or at once put a stop to the practices of these gentry in dealing with furs, but at least the imposition of such a license should materially facilitate the detection of offences.

In the case of fur-bearing animals, as in the case of game and fish, it is a matter of no little importance to have comparatively accurate statistics of the annual yield, for by this means alone can either an increase or decrease be definitely ascertained, and the proper measures taken accordingly to impose or remove restrictions. If trappers and buyers were licensed as suggested there would be no great difficulties in the way of obtaining such statistics, for the licensee in either case could reasonably be required to furnish figures on a form provided him for that purpose with his license. Moreover, the furnishing of returns of this nature would go a long way towards checking illegalities. If the trapper was required to send in a return of the numbers of the various species of animals caught and of the persons to whom the pelts were sold together with the license numbers of such persons and the dates of the sales, and the buyer to make out a return in duplicate, one to be sent in to the Department and one to be retained by himself, showing all purchases of raw or undressed furs and the persons from whom such pelts were obtained, together with the license numbers of such persons and the dates of the purchases, it would plainly be a simple matter to exercise close supervision on the buyers and exceedingly difficult for them to have furs in possession unaccounted for, while, where any illegalities were suspected, it would materially facilitate their investigation. In addition to this, as it is possible for an expert to determine more or less accurately the season in which a skin has been taken, not only would it be inexpedient for a dealer to have a pelt taken out of the proper season in his possession, but it would immediately be possible to

trace the offence home to the person who had actually taken the animal, so that all parties to the offence could be punished.

The economic value of the fur trade is so great that infractions of the law in regard to it should be treated with the utmost severity and the penalties made correspondingly high. In fact, in addition to a heavy fine on account of each animal taken or each pelt bought or traded, any irregularity should be punished by cancellation of the license of the offending persons, and the disqualification of such persons from obtaining another such license for a period of at least five years.

In the case of Indians it is plainly to be desired that they should conform to the laws and regulations in force in regard to the fur-bearing animals, and it is not to be doubted that in the main they would do so were it once made apparent to them that not only would it be almost impossible for them to dispose of skins illegally taken, but that infractions of the law would be visited by a cancellation of their permits to trap and trade in furs with white men. In regard to the returns as suggested to be furnished by the trapper, the buyer from an Indian should be required to fill them in and forward them to the Department where the Indian was insufficiently educated to attend to this work himself.

As before noted the lack of any incentive to the trappers to conserve the supply of animals has been one of the main factors in their depletion. At the present time on public lands it is open to any resident to trap wheresoever he chooses, and the trapper is, in consequence, urged on to catch all that he can, regardless of the ultimate consequences, by the knowledge that if he spares, someone else will likely happen along and destroy. To remedy this evil and to encourage conservation it would seem that a license or permit to trap should be endorsed with the approximate area for which it is valid, and that it should be made an indictable and punishable offence to trap on Crown lands outside the limitations designated on the license or permit, or at least on any area which may have allocated to another trapper. The licensee, also, so long as he obeyed the laws, should be entitled to a renewal of his license on demand. By these means an individual interest in his territory should be developed in the trapper, for not only would he have the sense of proprietorship and the security afforded by the knowledge that others could not legally impair his grounds, but also, there would be the incentive of personal profit in future years to urge him to take only a proper proportion of animals of each species and to encourage their increase, for as in many cases the land about him for miles would have been allocated to others, the depletion of his territory below the point where it was profitable to trap over it would necessitate a move to some considerable distance, should he desire to continue in the business, a thing which in many cases, particularly that of the settler, would be most inconvenient, if not well nigh impossible.

It is to be observed that if a license of $5.00 on trappers and a

license of $50 on buyers of raw or undressed furs were imposed, a considerable revenue would accrue to the government. In previous sections of the report attention has been called to the necessity for improvements both in the service of protection against fire and that of fish and game wardenship, which would involve considerable expenditures of money. It would seem, then, that as the fur-bearing animals are the creatures of the forests and a natural resource of a kindred nature to game, the revenue derived from this source might well be devoted to the improvement of these two services. It is to be noted, also, that it might well be questioned whether, even with the imposition of the suggested licenses, the public would be receiving adequate compensation for the exploitation of the fur-bearing animals. By the introduction of the license system, however, the way would at least be prepared for raising a greater revenue from this source should such be desired in the future, for statistics would be available on which to form an estimate of the average profit to the trappers and dealers, and the system of recording catches and sales would be in force which would greatly simplify the collection of a tax on pelts should such ever come to be imposed.

In connection with the law as it stands at present one point merits consideration. A permit, for which no charge is made, has to be obtained, not later than within ten days of the close of an open season, to entitle the trapper to be in legal possession of furs. In the case of mink and muskrat the open season extends from December 1 to April 30, inclusive, and men are engaged in the capture of these animals until the last day of the legal open season. In some portions of the Province trapping is carried on at a distance from civilization and it is a practical impossibility for the trapper to get out from his grounds with his furs within the specified time for securing a permit owing to the fact that while the ice at this period is dangerous for travelling, it frequently does not disappear from inland waters until nearly June sufficiently to allow of canoeing. Consequently, either the trapper must abandon his occupation some weeks prior to the close of the open season in order to get his permit in sufficient time, or else he becomes liable to fine and the confiscation of his pelts. While no general relaxation of the law is in the least desirable, it would seem that in certain regions magistrates might be empowered to use their discretion in the matter, provided the trapper could show that he had left his grounds at the earliest possible date after the close of the open season. In this connection it may be observed that under the license system previously suggested the returns from the buyers should be required to be posted to the Department within ten days of the close of the open seasons, and that it should only be possible for them to purchase the furs of trappers who could not get in from their grounds within this period by obtaining a permit to do so from the proper authority, and that the trapper, so situated, should be required to make affidavit that his furs had been taken within the legal open season and to secure a permit to authorize him to keep his

furs in possession should he for any reason be desirous of so doing. It would seem that the local magistrates might well be constituted the authority to deal with such cases at their discretion under the general instructions of the Department of Fish and Game.

Wolves.

Attention has been called in previous sections of the report to the diminution of game in the Province and to various causes therefor, but it must be acknowledged that as a destructive agency in so far as four-footed creatures are concerned the wolf must be accorded no small distinction. Unfortunately, almost throughout the forest areas the timber wolf is to be found in greater or less abundance and the depredations of this animal on the ranks of the deer are annually enormous. It is a natural and inveterate hunter, and not satisfied with killing that which it requires for food, will hunt and slay for the mere pleasure of so doing. In general it operates in pairs or small bands, following up its quarry at a leisurely trot by the sense of smell with a persistency that but seldom is thwarted, but the greatest of its opportunities to work damage and destruction occur in the winter months when the snow drifts are deep and the deer yarded. Then, with its prey helpless and at its mercy the wolf approaches and kills to its heart's content. Wherever the deer are to be found in the Province, there will the wolf also be found, and if for one reason or another the deer migrates from any area into another, the wolf will follow suit, as was well instanced in the Rainy River district, where the deer were practically unknown until recent years and the wolf comparatively scarce, but where no sooner did the deer commence to appear in numbers, driven northward in all probability from Minnesota by the forest fires raging in that State, than the wolf arrived also, and its numbers are now, apparently, steadily increasing. When each adult wolf will kill in all probability one or two deer each week of the year, it becomes at once apparent what an enormous drain on the deer supply there must be from this cause where wolves become at all numerous. The extent of the damage wrought to moose and caribou is less certain, but at least it would appear more than probable that some destruction of these animals is effected by wolves, more particularly in regard to the calves. In the western portions of the Province there is also to be found the brush-wolf, which prey largely on the smaller fur-bearing animals, such as the fisher and marten, in addition to other game, and is consequently the cause of no small loss to the Province.

The wolf is by nature one of the most cunning of animals, and it is but rarely that he will afford the hunter an opportunity of shooting him or will suffer himself to be caught in an ordinary form of trap. The most usual and effective method for the destruction of this harmful creature would appear to be poisoning.

The necessity for reducing the number of wolves to a minimum cannot be gainsaid, but none the less many objections have been advanced against the lavish use of poison for the purpose, and in fact in this Province at the present time it is illegal to place poison for wolves where any other game is liable to find and take it. It is claimed that where poisoned meat is placed on the ground, other smaller creatures, such as the mink and fisher and various birds, will almost invariably be the first to discover it, and that in consequence not only will there be a considerable destruction of wild life for the sake of a problematical chance of destroying a wolf, but that there will be likely to occur, also, a loss of valuable fur, inasmuch as the smaller fur-bearing animals will more frequently than not succeed in crawling to some little distance before they die and thus escape the notice of the trapper or hunter laying the poison. Even more extravagant assertions in regard to the extent of damage done by poison have been advanced in the case where poisoned meat is placed on the ice towards spring and left there to fall into the water, together with such creatures or their carcasses as may be poisoned thereby, but it would seem that where due precautions are taken in the matter of placing the poison in the meat and in the location of the bait itself, not only should the destruction of other forms of wild life be comparatively trifling, but waste of fur also should be rendered most unlikely, for the poison can be placed in sufficiently large pieces or quantities as to ensure the almost immediate death of any creature devouring it.

There can be no question as to the necessity for destroying a greater number of wolves annually than is at present effected, for it would appear that in several sections of the Province, at least, wolves are increasing. Poisoning is acknowledged to be the only effective method of destroying wolves, but in this Province poisoning must be held to be practically illegal, although the wolf is not protected against it, for under the Act all such fur-bearing animals as are afforded any form of protection are deemed to be game; the poisoning of all fur-bearing and other animals classed as game is forbidden; and it is plainly impossible to place poison for wolves where it can by no possible means endanger any of these creatures, and at the same time be effective. At the present time the law is more or less winked at. If it is necessary to encourage the killing of wolves, the placing of poison should plainly be rendered legally feasible for this purpose, within reasonable bounds. The licensing of trappers would appear to afford a means of doing so without encouraging the too general use of poison, which cannot but be more or less dangerous to other forms of wild life. If only licensed trappers or Indians holding a permit to trap were entitled to use poison for the purpose of killing wolves, and then only in localities where but small harm to other creatures was to be anticipated, there would not only appear to be but little risk of much damage to wild life being effected, but if in addition the claimant to government bounty were required to send in

with his claim the number of his license, the possibility of fraud in this connection would be very greatly diminished, for it would be practically impossible for anyone not so licensed to kill any number of wolves, for poisoning, the only effective method, would be illegal for such person, while, again, the license number would indicate the exact area in which a wolf or wolves had been taken by poison by the trapper and any excessive number of claims under such circumstances would be easily detected. It might, however, be advisable to require of all trappers making use of poison to burn the carcasses of all creatures destroyed thereby, in order to reduce the chances of death to other animals through devouring them to a minimum.

At the present time a bounty of $15 is offered by the government for the destruction of a wolf; the claimant to the bounty being required to furnish the ears of the animal in proof of its destruction. Unfortunately, cases have occurred of late where extensive frauds have been perpetrated on the government in this connection, large quantities of wolf ears having been imported from without the Province and bounties claimed and paid for animals which had never been within miles of the provincial borders. The detection and severe punishment of offences of this nature in the western portions of the Province will undoubtedly have had a beneficial effect in the direction of preventing their recurrence, but it is to be observed that so long as the ears only are required by the Government in substantiation of a claim, so long will it be comparatively easy to perpetrate the fraud. The time, patience and good fortune necessary to secure a wolf militate largely against very active prosecution of its pursuit by those engaged in ordinary trapping operations. The skin of the wolf, undamaged, is worth in the neighborhood of $5.00. It would seem, therefore, in the best interests of the Province that a more substantial bounty should be offered the trapper for the destruction of wolves, and that if the bounty were raised to, say, $25 and the whole skin required by the Government in support of a claim, not only would a considerably greater number of wolves annually be taken, but that the chances of fraud in this connection would be materially diminished. Moreover, the skins would retain their full value, instead of being mutilated and thus depreciated, and consequently not only would less of these pelts be wasted, but by selling them the Government would in some measure, at least, be recouped for the additional bounty. Undoubtedly special steps should be taken to reduce the numbers of wolves in the Provincial Forest Reserves to a minimum, and where a permanent staff of rangers is maintained, it would appear that there should be no difficulty in so doing, if the matter is taken energetically in hand.

Recommendations.

Your Commissioner would, therefore, recommend:—

(1) That the beaver be declared a perquisite of the Crown through-

out the Province; that where or when in any district beaver are sufficiently numerous that trapping can be advantageously conducted without endangering the perpetuation of the creature in such district, trapping operations be undertaken by officers of the Government; the pelts thus secured branded with a government mark and sold by public tender for the benefit of the public treasury; and that it be declared illegal for any private person whatsoever to have in possession, barter or trade in raw or undressed beaver pelts in the Province of Ontario which are not so branded, no matter where such pelts may have been obtained, other than when a permit for this purpose shall have been obtained from the Government.

(2) That the dates for the open season for muskrat be amended to March 16 to April 30, both days inclusive.

(3) That a license fee of $5.00 be charged to citizens and *bona fide* residents of the Province for the privilege of trapping on public lands; that Indians only be exempt from this charge, but be required to obtain a permit in lieu of such license; and that each person while engaged in trapping be required to carry his license or permit on his person.

(4) That the approximate area which may be trapped over be designated on the license or permit issued to each trapper; that it be declared an indictable and punishable offence to trap on Crown lands outside the limits designated on the license or permit; and that a trapper be entitled to a renewal of his license or permit over the same area provided only that he shall have in no way disobeyed the game laws, and shall have complied with the provisions of his license or permit.

(5) That all fur-buyers and dealers in raw or undressed furs, engaged in this business in Ontario, be required to take out a license; that the charge for such license be $50; and that in the case where more than six collecting stations are maintained by one firm, or more than six buyers or agents employed by one firm at various points throughout the Province for the purpose of collecting furs, an additional license fee of $10 for every such station or agent be charged.

(6) That all trappers or fur-buyers as a condition of license or permit be required to furnish the Department, on a form provided with the license or permit for that purpose, with statistics of the numbers and species of each animal killed, sold, bought or otherwise disposed of; that in the case of Indians or other trappers being unable to write, it be required of the buyers purchasing from them to fill in their forms for them and forward the same to the Department; and that such returns be required to be posted to the Department within ten days of the close of the legal open season.

(7) That provision be made on such forms for distinction between each sale, gift, trade or purchase effected, of the various dates thereof, and the license numbers of the persons with whom each transaction was effected; and that it be made an indictable offence, punishable by fine and cancellation of the license, to render false or incomplete returns

on these matters, provided only that where the figures for Indians or other trappers shall have been filled in by the buyer, such buyer shall be held responsible for the figures.

(8) That any illegalities in connection with the trapping of fur-bearing animals or the bartering, purchasing, holding or trading in the pelts of the same, be made punishable by a fine of not less than $5.00 for every such creature trapped or pelt bartered, purchased, held or traded, together with the cancellation of the license of the trapper, buyer or dealer so offending and disqualification of such person from obtaining a license for a period of five years; provided only that in the case of firms maintaining a number of agents for the purpose of trapping, or purchasing pelts of fur-bearing animals, if it could be proved that a firm had taken reasonable precautions to guard against such infractions of the law and had no knowledge of the same, the license of such firm be not cancelled, except when two offences in its behalf occur in one year, but in such cases the trapper or buyer of the firm be treated as a private individual.

(9) That, if possible, steps be taken to have the close seasons for fur-bearing animals observed by Indians on public lands under pain of equal penalties as applicable to white men, and that in any case it be made an indictable offence, punishable by fine and imprisonment for any Indian to barter, trade or attempt to barter or trade the pelts of fur-bearing animals protected by law or taken during the legal close seasons for such animals, except and only among his own kind within the limits of an Indian Reservation.

(10) That, as at present, a trapper or buyer be required to obtain a permit within 10 days of the close of the open season for any fur-bearing animal to have the pelts of the same in possession; but that where, owing to natural cases, it is impracticable for the trapper to obtain such permit within the legal period, steps be taken to constitute an authority in each such district to grant such permits at its discretion after due investigation; and that in such cases any subsequent sale or trade of the pelts thus held be only effected under permit granted by the same authority, and provided that a record of such transaction is forwarded to the Department.

(11) That the bounty on wolves be raised to $25.00; that it be required of each applicant for such bounty to forward the entire skin of each wolf, unmutilated, together with each claim made; and that where such applicant is trapping under license or permit, the number of such license or permit be clearly marked on each claim.

(12) That the present regulation in regard to the use of poison be amended in so far as to legalize and render feasible the use of such material for the taking of wolves only by trappers operating under license or permit of the Province, provided only that due precautions be taken to select such localities for the purpose where the minimum amount of harm is likely to be done to other wild creatures or domestic

animals, and that the trapper be required to burn the carcasses of all such creatures whatsoever that may be killed by such poison.

Feathered Game.

It has, unfortunately, to be recorded that the quantities of the various species of feathered game to be found in Ontario have in almost every case and in almost every district considerably diminished, and there can be little question that the main cause of this regrettable state of affairs is overshooting. One of the chief difficulties coincident with the enactment of restrictive legislation in regard to the shooting of several species of feathered game in such a country as this is that, while the most logical dates for the open seasons for the various species are not always identical, the birds themselves are to be encountered largely over the same areas. It has, indeed, been demonstratd to be almost impossible to protect one variety by a close season during a period when other varieties might be legally shot. Another obvious difficulty is the matter of meeting the local conditions prevailing over such a wide area by general legislation. It may, in fact, be confessed that to do so would appear a practical impossibility; at least, to the extent of completely satisfying the wishes of all the sportsmen living in the various districts. Further, the fact that certain varieties of game birds are migratory enhances the difficulty of affording them adequate protection, for there will inevitably be some considerable protest at depriving citizens of game for the benefit of a neighboring nation. To further complicate the situation, feathered game is so small and so comparatively quickly and easily disposed of, that the detection of offences against such restrictions as may be imposed is exceedingly difficult over such a wide region as the area of Ontario, and consequently the laws in all too many instances are broken with impunity. In addition to this, also, feathered game is so highly esteemed for table purposes that reputable citizens, who themselves would not break the law, in certain cases abet its infraction by others through the repeated purchase of illegally taken game. In view, then, of the general situation as it exists in regard to feathered game, it is necessary briefly to examine into the laws and conditions affecting the various species.

At the present time a close season is afforded to the woodcock, the partridge and the quail, the dates for each bird being:—

Woodcock	October 15—November 15
Partridge (grouse)	" 15— " 15
Quail	November 15— " 30

The woodcock is a migratory bird, and there can be but little question that in certain of the southern portions of the Province it arrives frequently before the open season commences and is flighting after the season has closed, although the main flight seems usually to occur during the course of the open season. Naturally enough sportsmen, with

whom the bird is a favorite, feel it a hardship not to be able to shoulder a gun during the periods of the woodcock's stay in their vicinity on its way to southern climes and demands are made that the open season be extended to include the whole of October and November. The partridge, or ruffed grouse, which had become so scarce that a close period of two years had to be afforded it to recuperate its numbers, is in many sections of the Province in condition to be shot by the middle of September, while in other localities the opening of the season so early, when the young may perhaps not have matured, or in any case the birds are packed and disinclined to break coveys, would result in inordinate destruction. Again, in certain areas the partridge would afford good sport well into December, whereas in the northerly regions, the snow drives it into the trees and it becomes a simple matter to slaughter it, although shooting under such conditions cannot be deemed a sport. The quail breeds somewhat later than the partridge, and occasionally raises a second clutch, so that it would not be safe or advisable, as a general rule, to open the season early in the fall for this bird. Under the present arrangement whereby the opening of the season for quail coincides with the closing of the season for partridge and woodcock, none of the birds, as before observed, derive the full benefit from the protection afforded them, and it is to be noted, also, that there is reasonable force in the contention that so short a season as a fortnight tends in the direction of excessive slaughter, for where the sportsman has but so brief a period for his sport open to him, he will be encouraged to make the most of his opportunities. In this regard it should be remembered that a great number of sportsmen have businesses or other occupations which necessitate their close attention, and in consequence cannot spare more than a day or two at most each week to hunt or shoot, and that, therefore, a very short season is a distinct hardship to them.

There can be no question that in the general interests of the community it is better in so far as possible to make the open seasons for birds or creatures inhabiting more or less the same regions or localities similar throughout the Province, for differentiation between adjacent localities tends not only to difficulties in administration and in the enforcement of the laws, in addition to excessive legislation, but also to considerable local friction. Consequently, even though admittedly it is impossible to satisfy every one or to meet each and every local condition or requirement, this broad principle should, in so far as possible, govern the fixing of the dates for open seasons. Undoubtedly the desideratum would be an open season of considerable duration, to include both large and small game, so that for the greatest possible time sport should be available to the sportsman and game food to the general public, but to arrive at such a situation it is necessary, first, to have produced an abundance of game, a sentiment among the public at large which will put an end to widespread malpractices or connivance at the same, and a staff of wardens capable of and able to enforce such restric-

tions as have to be made. No one, unfortunately, could claim that such a situation exists in Ontario to-day, and consequently the best that can be done is to have comparatively short open seasons, in so far as possible, coincident with each other. Too short a season is, as already been noted, objectionable on certain grounds, while a very protracted season has already proven itself too dangerous for certain birds under existing conditions. A six weeks' season for partridge and woodcock, from October 15th to November 30th, and a four weeks' season for quail, from November 1st to 30th, would, therefore, appear to be the nearest approach to the ideal which can at present safely be ventured.

In regard to wild ducks, the open season for which extends from September 15th to December 15th, it is to be noted that all of these birds are more or less migratory, and that almost throughout the Province their numbers have greatly diminished of recent years. Various causes have been assigned for this; various remedies tried and suggested; but no effort has as yet been made to strike at what is apparently the root of the evil, namely, excessive destruction. The popularity of the duck as a table dish and its former exceeding abundance resulted in the development of an enormous market for the bird, and the demands of this market show no signs of diminishing in proportion to the dwindling numbers of ducks, but on the contrary to be steadily increasing. In fact, it would not be too much to say that in general it is the market hunter who is chiefly to blame for the diminishing quantities of ducks in the Province and not the sportsmen of the Province, the carp or other extraneous circumstances. It is apparent that no matter what size a marsh may be, the continued and energetic operations of the market hunter, resulting in the slaughter of great quantities of ducks practically every day, not only must effect a terrible drain on the ranks of the ducks, but must also tend to drive them away, for like other creatures ducks require a modicum of rest and peace in order to remain in a given locality. There can be little doubt but that the prohibition of the sale of ducks would result in a very rapid augmentation of their numbers, but it is unquestionable that such a measure would encounter a storm of protest and abuse. Moreover, the object of conservation is not to deprive the public of game, but rather to insure that the public shall be able to take advantage of it. In certain cases where a variety of game becomes very scarce it becomes imperative to place restrictions on its sale in order to eliminate the market hunter, but such a measure is, in a sense, but a final recourse, for though under it the public are still afforded opportunities to obtain game, if they will, by shooting, or if they can, as a gift from friends who have done so, the majority of the public is, in all probability, not in a position to secure the game, and in consequence is deprived of it altogether. This situation has, indeed, given rise to a more or less widespread feeling that sport is the rich man's pastime, and game the rich man's perquisite, and that the game laws are devised in the interests of the wealthier classes of the commun-

ity. Such a belief is plainly erroneous and much to be deplored, but it serves at least to exemplify the necessity for not lessening, unless absolutely imperative to do so, the varieties of game purchaseable by the public, but rather, where feasible, to augment them. On the other hand the sportsmen of the Province undoubtedly merit some consideration, for they are a very numerous body, comprising all classes and occupations, and if for no other reason than that it is an injustice to them, the depletion of the numbers of ducks through the operations of market hunters cannot but be deemed highly regrettable. Moreover, it is perfectly apparent that if the diminution of recent years continues in like proportion in the future, not only will the sport of the sportsmen have been ruined, but there will be but few ducks remaining for the public market.

Practically all varieties of ducks are migratory and objection will inevitably be made to any further restrictions on their slaughter on the grounds already mentioned in regard to the woodcock, but although there is some foundation for this argument, it is most sincerely to be hoped that the day is not far distant when the open seasons for all migratory birds throughout the continent will be fixed by an international commission, for in the creation of such a body would appear to lie the chief hope, not only of satisfactorily disposing of this problem, but even of perpetuating in any numbers the migratory game birds. Indeed, every effort should be made by each administration, by each sporting association or club, and by each individual sportsman or lover of wild life to hasten the day when such an international body shall be appointed to regulate such matters. Meanwhile, it may be observed that, after all, the perpetuation of the birds is the chiefest consideration, and that it cannot be the part of wisdom in any way to assist or connive at their extermination. It is better, indeed, to fight a good fight for a losing cause which is just, than ignobly to abet an evil, mainly because it is being perpetrated by others.

In view, then, of these considerations it would seem that at the present time the most reasonable course to pursue is to limit the individual daily bag of ducks, taken on public lands, marshes or waters, to some reasonable number. Plainly this will not result in the disappearance of the market hunter, but at least it will serve as a check on his depredations. It may be argued that it will be difficult to enforce such a law, or, again, that it will entail a hardship on sportsmen, but it is to be observed that a bag limit is imposed in regard to certain of the sporting fishes, and the law is fairly well enforced and obeyed, to the advantage of the fisheries, and that, also, say thirty ducks is a reasonable bag for any individual sportsman in one day.

At the present time the ducks get but one day's rest a week from the hunter, namely, Sunday, and it is widely held that if a greater period of immunity were granted the birds in which they could rest and feed in peace, not only would it, by shortening the period of time available

to the hunter, result in a decreased slaughter, but would tend, also, to keep the ducks for longer periods on the feeding grounds on which they settle. There would appear to be much force in the contention, and it is not to be doubted that a considerable effect would be produced on the numbers of ducks by limiting the number of days on which they might legally be shot. It is by no means easy, however, to determine what would constitute a reasonable period of time for this purpose or which days would best suit the convenience of the majority of sportsmen. It would seem, perhaps, best on the whole that the close period should be integral, for alternating close and open days would be apt to lead to confusion and, in any case, would enhance the difficulties of enforcement of the law over so wide an area as the Province. Sunday is a close day already, and Saturday, in many parts of the Province, affords numerous hunters their only chance in the week of enjoying this sport, while Wednesday is also in some localities and in some businesses made use of for the purpose of a weekly half-holiday. It would seem, therefore, that Monday of each week might in any case reasonably be added to the list of close days for ducks on public lands, waters or marshes, nor is it to be doubted that it would be of material advantage if Tuesday of each week were included also.

The shortening of the open season for wild duck by the elimination of the first two weeks in September was undoubtedly a wise and beneficial measure in regard to the great bulk of the Province. It has, however, given rise to a situation somewhat akin to that already referred to in the case of the woodcock, partridge and quail in that, as it remains legal for the hunter to shoot plover, rail and snipe from September 1st, many of them will be found in the marshes during the first fortnight of September and, consequently, not only is it most difficult for the wardens to enforce the close season for ducks during this period, but undoubtedly also the ducks will not derive the full benefit of the additional protection afforded them through the postponement of the opening of the duck season to September 15th. There is no apparent advantage in or necessity for making the open season for the waders different from that for ducks sufficient to compensate for this great disadvantage, and it would, therefore, seem most desirable that the open season for ducks, plover, rail and snipe should be made coincident.

Another migratory bird, the numbers of which annually visiting the Province have materially decreased, is the Canada goose. Probably no bird is more wild or more wary than the goose, and yet it is not to be doubted that the main cause of the decreasing numbers of the bird in the Province has been the reckless overshooting and slaughter that has taken place whenever opportunity offered. As remarkable an illustration, as perhaps could be found anywhere, of how wild fowl appreciate a measure of security and of the instinct that will guide them in increasing numbers to localities where it is accorded to them, is furnished by the experience of that genuine sportsman, Mr. Jack Miner, of Kingsville,

Wild Geese on Mr. Jack Miner's Pond, April 9, 1909.

Ontario. Mr. Miner is no game-hog, and when in the spring of 1908 eleven wild geese settled on a little pond in the vicinity of his house and joined the flock of 16 tame birds that lived on it and on another little pond immediately in front of his house, he refrained from disturbing them and prevented others from doing so also. The birds soon became accustomed to their surroundings, and even though Mr. Miner subsequently shot five of the eleven wild birds, the remainder came back and joined the tame flock on the pond in front of the house, where they stayed until May 15th, when they migrated north. On March 20th, 1909, 32 wild geese arrived and settled on these little exposed ponds, where they were accorded the same treatment as in the previous year, and though on this occasion Mr. Miner shot 12 of them on April 10th, the remaining 20 stayed on until they took to wing on their way to the north lands on May 1st. On March 4th, 1910, 30 wild geese arrived, and from that date on the flock continued increasing until some 250 or 300 wild geese were assembled on the two ponds. Mr. Miner allowed 36 to be shot, but the balance as before did not abandon the ponds on that account, but remained on until the time arrived for the northward migration. The accompanying illustrations well indicate the exposed nature of the pond immediately in front of the house, and it is exceedingly doubtful whether such photographs of this exceedingly wild bird have ever before been taken. The facts, however, that the birds were willing to live in such a public and exposed place for several weeks on end and to become so used to the presence of human beings, as the photographs prove them to have been, clearly indicate what the result would be, not only to the numbers of wild geese, but to those of other waterfowl and game birds, if the great bulk of the shootists were as good sportsmen as Mr. Jack Miner, of Kingsville, and confined their annual slaughter to the bounds of reason.

The open season for pheasants, which was declared during the past year, resulted apparently in the satisfactory discovery that the birds were more plentiful than had been supposed, and most excellent sport would appear to have been enjoyed. Sufficient time, however, has not yet elapsed to enable a determination to be arrived at in regard to the advisability of repeating the experiment of an open season during 1911. Careful investigations should be made on this point by the proper authorities, for the pheasants in some localities have become so well acclimatized and are thriving to such an extent that it would be a grievous mistake to allow their numbers to become unduly diminished. The question, also, as to the shooting of hen birds merits consideration. The past season was very properly only open to cock birds, and this restriction would, on the whole, seem to have been fairly well observed. Moreover, it would appear to have won the approbation of many sportsmen, as the hens were apparently so easy to find that it would have been a simple matter to have killed great numbers of them. It is to be noted, however, that to maintain good stock, the percentage of cocks to hens

should not in general be allowed to fall below one to four or five, and also that it is at all times expedient to kill off old hens, as these will frequently interfere with the breeding of younger hens. Consequently the percentage of cock birds available for breeding in the spring should be roughly ascertained, and, if it is found to be unduly small, provision might be made for this contingency when next an open season is declared, either by throwing open one or two weeks of the season to the shooting of both cocks and hens, reserving the remainder of the season for the shooting of cocks only, or else by allowing the shooting of hen birds, in addition to cocks, on certain days of the week throughout the season. The pheasant is such a handsome bird and provides such fine sport, in addition to being so highly esteemed a table delicacy, that it is a matter for congratulation that it is catching on so well in certain portions of the Province, and it is well worth while taking some little pains to insure its perpetuation.

The prairie chicken, which formerly was comparatively plentiful throughout a great portion of the Rainy River District, has now practically become extinct in that region. Various causes have been assigned for this, but it would seem as usual to have been mainly the fault of indiscriminate and excessive slaughter. The prairie chicken is a magnificent game bird, and equally popular for table purposes, and in addition to the areas in the Rainy River District there are other portions of the Province where it would, in all probability, thrive. It is not so nervous a bird as the ruffed grouse, and far more easily domesticated. Moreover, as it prefers the open to the woods it would be unlikely to materially affect the grouse or partridge, and in addition is a most valuable bird to the agriculturist. It would seem, therefore, that it might well be worth while to try and reintroduce this bird into Ontario.

The question of private game preserves is one that merits some little attention. In this Province the principle has been adopted of keeping the shooting on Crown lands open to the public, and of not alienating the sporting rights over them to private individuals or clubs. There can be no question that this policy is both the wisest and the fairest in the interests of the general public. As, however, sections of the country become populated and taken up by the agriculturist, the areas of Crown lands in them inevitably become diminished or disappear, and the question of game in such areas is on an altogether different footing to that prevailing over the great bulk of the Crown wild lands. The farmer has the right to post his lands, and if he is fond of shooting will probably do so if there is any game to shoot, more especially so should he have taken any measures to produce or maintain that game. Moreover, such stretches of public lands as there are in these districts are peculiarly accessible to the hunter, and the difficulty, therefore, of maintaining a supply of game in them is materially enhanced. In fact, in the settled portions of the Province it would seem that the only practical means of perpetuating the game lies in a measure of individual, in addi-

Wild Geese on Mr. Jack Miner's Pond, Kingsville, Ont., April 15, 1910.

tion to governmental, conservation. The shooting of the farmer has a distinct value; that of his neighbors also. By posting their lands and thus conserving the game on it, and by combining to any desired extent, they have in their possession a shooting which can be annually leased for a fair sum at least. Where the farmer does not post his land or take interest in game, all and sundry will shoot the game over it until all game has disappeared, and with it a legitimate source of income to the farmer. Plainly it is better to have the game on the farm, and that the farmer should profit from it, than that there should be no game, and consequently no profit from it to the farmer or anyone else. Indeed, there can be little doubt that as the population increases and shooting becomes more difficult to obtain, there will be an ever-increasing field for profit in game of which the farmer should take advantage, and that when this fact becomes more generally recognized by the farmers, game will increase through the efforts of the farmers in raising and protecting it.

A very similar situation arises in connection with duck preserves over duck marshes in populous neighborhoods. The indiscriminate shooting that will occur throughout the length and breadth of public marshes in such localities day after day during the open season, is calculated to insure that the ducks will be slaughtered and, to a great extent, driven away. Moreover, should ducks breed in these marshes, frog hunters and others will be here, there and everywhere disturbing them and working considerable damage. On the other hand, the existence of a private preserve in such a locality tends to remedy many of these evils. In the majority of cases the preserve is well looked after and the breeding ducks are not disturbed, while, also, precautions are, as a rule, taken to prevent shooting on warm or still days when ten shots fired will be likely to drive away more birds than 1,000 shots on a windy day, and to limit the extent of the shooting, as likewise the hours between which it may take place. As a result of these precautions the ducks are enabled to feed and secure a measure of rest, and, in most cases, not only do they become plentiful on the preserve itself, but the shooting over adjacent territory is also considerably improved. The general sentiment of the population of this Province is undoubtedly against the private duck preserve, especially when it is instituted over marshes which long have been open to the public, but it is a question whether in the more densely populated and most accessible areas a greater measure of preserves will not become actually necessary in the future, if the shooting is to be maintained to any degree of excellence. In the wilder and remoter regions there can be no advantage in or necessity for such preserves. In fact, in such regions the public rights to the shooting should be most jealously safeguarded; and, indeed, in the older portions of the Province, even though a preserve is apparently in many ways advantageous, especially when situated in some portion of an extensive marsh, every effort should be made to insure that in all cases the bulk of the marsh

remains open to the public, and that small isolated marshes, which afford even limited sport to the many, shall not be alienated from the public for the benefit and the privilege of the few.

Recommendations.

Your Commissioner would, therefore, recommend:—

(1) That the dates of the open seasons for partridge (ruffed grouse) and woodcock throughout the Province be made: October 16th to November 30th, inclusive; for quail, November 1st to 30th, inclusive; and for plover, rail and snipe, September 15th to December 15th.

(2) That on all public lands, marshes or waters it be declared illegal for any person to shoot, kill or take more than 30 wild ducks, all species and varieties of wild ducks and teal included, in any one day, provided only that such restriction shall not be held to apply to such areas as are posted and maintained as duck preserves.

(3) That Monday of each week during the open season for ducks be declared closed to duck shooting on public lands, marshes or waters.

(4) That adequate steps be taken to ascertain the desirability of declaring an open season for cock pheasants during the year 1911, and in the event of an open season being decided upon, of legalizing the taking of a proportion of hen birds.

(5) That all possible efforts be made by the administration in the direction of encouraging the introduction of international regulations in regard to the killing or taking of migratory game and other birds.

(6) That the principle be maintained of not alienating the shooting privileges over Crown lands, marshes or waters in the wilder portions of the Province to private individuals, clubs or corporations; that in the more populous and opened sections of the Province, should it be deemed desirable to grant such privileges in the interests of propagation and conservation, the extent of public land, marsh or water over which shooting rights are thus alienated from the public be strictly limited; and that in no case an entire marsh or water area suitable for wild ducks be thus alienated.

The Collection of Non-Resident Licenses and Cold Storage.

In some sections of the Province there is little doubt but that a considerable number of non-residents hunt, shoot and fish without paying the legal license fees. Most particularly so would this appear to be the case in the vicinity of border towns. The great majority of sportsmen who visit Ontario from outside undoubtedly enter the Province through the border towns, and it has been suggested that, as a means of counteracting as far as possible the evasion of the shooting and angling licenses by such persons, where they have in their possession on entering the Province hunting dogs, guns or angling equipment, they

A Misty Day on the Steel River, Thunder Bay District.

A Corner of Rainy Lake.

should be compelled to take out the corresponding license as a condition of their property being passed through the Customs, irrespective of any declared intention to hunt, angle or otherwise. There is but little question that considerable amounts of money would be collected by this means which otherwise would be lost to the treasury, but it is to be observed that this would be a somewhat arbitrary measure and likely, in many cases, to be resented by the visitor as an imputation of dishonest purpose. Further, the Customs' officials are not under Provincial control, and consequently the measure would thereby be somewhat complicated, and in addition to this, the Province maintains a warden force to enforce the regulations, and if that warden force is inefficient, it is the Province and not the visitor which is to blame. Undoubtedly there will always be some strangers anxious to escape the payment of the non-resident hunting, shooting or angling license fees, and sufficiently ignoble to resort to such means as false registering to accomplish their purpose, but under an efficient system of administration the chances of detection should be so great as to reduce the numbers of such would-be evaders of the license fees to a minimum.

Some objection has been raised to the regulations whereby game may not be kept in cold storage by firms engaged in that business longer than the 16th day of January following after the close of the open seasons. A license fee of $25 is charged for the privilege of storing game. It is claimed that the fee is so high that in many cases the amount of game dealt in by the firm does not cover the cost, and that a longer period should be open to the firms in which to dispose of the game. The main reason for the enactment of the regulation was plainly to afford a safeguard against the illegal slaughter of game during the close season, and it is not to be doubted that as a means of protection the law, as it stands, is generally effective. To prolong the period in which indigenous game might legally be dealt in from cold storage would, therefore, not appear advisable, and if an injustice is being done the cold storage firms, the best means of remedying it would evidently be to reduce the license charge. The cold storage firms, however, can be relied on to take this matter up themselves when the majority feel the necessity of so doing, and it may be observed that a high license is beneficial in that it tends to centralize the storage of game and thus renders supervision comparatively easy. In regard to game that is not indigenous, or, in other words, which is imported from outside the Province, seeing that such game could be shipped in bond to the importer and the shipment only released under authority of a government inspector, it would seem reasonable that cold storage of such game could safely be permitted for longer periods than at present allowed by law. The laws in relation to public carriers afford considerable protection to indigenous game, so that even though in such a case as that of the English pheasant which is now to be found in certain restricted portions of the Province, the imported bird could not be distinguished from the

local variety, no great harm would be likely to accrue; in fact, not more so than under the present system; for the majority of purchasers would buy from a reputable dealer whose importations would have been franked by a government inspector, and there should be little, if any, additional difficulty to that experienced at the present time in detecting illegal trafficking in local or indigenous game. It would seem, therefore, that under the present graduated license for the privilege of importing and storing game the cold storage firms might be allowed to import game from abroad and deal in the same until March 31st, provided that due arrangements were made to inspect and check the shipments, in addition to the cold storage houses during the extended period. There is little doubt but that in the future various enterprises will develop in the Province in the direction of game farming chiefly for market purposes, which will necessitate some modifications of the present laws in regard to the sale and cold storage of game, for it is plainly in the interests of the public that such enterprises should be afforded reasonable opportunities of marketing their products, seeing that an increase in the diversity of wholesome foods available to the public cannot but be of general advantage. It will, however, be time enough to deal with such a situation when the enterprises have been or are in the process of being established.

Recommendations.

Your Commissioner would, therefore, recommend:—

That under the present scale of license cold storage firms be allowed to import, hold in cold storage and deal in game thus imported up to and including March 31st of each year, provided only that all such importations shall only be released from bond on a certificate being obtained from the proper authority; that such certificates must be held on the premises so long as any proportion of the game is held in cold storage; that no game whatsoever be held in cold storage without such certificate after January 16th of each year; and that adequate steps be taken to arrange for the inspection of cold storage premises throughout the period indicated.

Game Farms.

In a previous section it has been pointed out that in the raising of game for market purposes there exists an opportunity for profitable commercial enterprise, and that any addition to the permanent food resources of the community cannot but be advantageous. It has been noted, also, that in the more cultivated sections of the Province a great deal can be accomplished in the direction of increasing the supply, or even the varieties, of game through the efforts of those cultivating the soil, and that not only is such an eventuality much to be desired, but worthy, also, of every encouragement in the interests of the farmers, the sportsmen and the public at large. In the United States these ques-

tions are receiving ever increasing attention, many individual states as well as private individuals or firms having become interested in the production of game on a large scale, and it may here be noted that a movement of no little dimensions has arisen in the direction of still further augmenting state and individual efforts in regard to the production of game, it being claimed that the principle involved affords the soundest, if not actually the only satisfactory, solution to the problem of perpetuating the game of the country, placing game food within the reach of the bulk of the population, and at the same time of securing such an abundance of wild creatures that there will be an abundance of sport for everyone without the necessity for irksome restrictions. It cannot be denied that there is very considerable truth in this contention as a whole, but it is apparent that until the game farm shall have made its appearance in this Province and be producing considerable quantities of game, there must remain the most urgent necessity for safeguarding the wild creatures, and that under any conceivable conditions some measure, at least, of protection to them will be found not only advisable but indispensable. There is, moreover, an under-current of thought connected with the widespread cultivation of game in which may ultimately be found a menace to public rights and privileges in regard to hunting and shooting. Some varieties of game can be more advantageously or easily raised under semi-wild conditions, while under completely natural conditions most indigenous game will thrive and multiply to an astonishing extent if afforded more or less complete protection. Hence, under the cloak of the production of game there will almost inevitably appear the lean head of purely selfish interests, clamouring to be apportioned the shooting rights over large areas of public lands and claiming to be a public benefactor in the direction of game protection and propagation, while the public are excluded from participating in the sport to be found over the territory allotted or leased to it. The legitimate game farm, even though it be of some considerable size, and the small preserve in a country thoroughly opened up and under cultivation are one matter; the alienation of public shooting rights over large areas of public lands is altogether another. Consequently, while encouraging the game farm and bowing to necessity in the case of the small preserve in populous sections of the Province, no consideration or argument should be allowed to affect the principle, fortunately so firmly rooted in Ontario, that sport on public lands is the heritage of the people at large, or to countenance any departure therefrom in regard to the vast areas of Crown lands in the wilder sections of the Province.

There are in various portions of Ontario areas of wild and rough land from which the timber has been largely removed, but which will never prove of much service to the community in the matter of agriculture. Such areas will in many cases be found to be suitable to the purposes of deer farming. Deer are comparatively prolific. The rutting season occurs in the fall or early winter and the period of gestation is

about seven months, the fawns being usually born about May or June. The young does breed when about seventeen months old and have usually but one fawn the first time, but subsequently two fawns are produced in the majority of cases. As instancing the rapid increase of deer may be noted the case of the Otzmachon Rod and Gun Club, Clinton County, Pa., which placed about 90 deer in its 4,000 acre park and in six years had 2,000 head and were expecting an additional 1,000 fawns in the early summer. Deer are easily and cheaply raised, and comparatively hardy, living approximately twenty to twenty-seven years. They will eat wild rye and other soft grasses, buds and leaves of trees, growing wheat, clover, peas, barley, oats, vegetables, corn, bran, chops or fruits, in fact, almost anything except dry hay. The cost of feeding them in suitable localities has been estimated at one-half a cent each per day. They are easily confined by a woven wire or barbed wire fence 6½ feet in height. In addition to the fact that were deer more readily obtainable doubtless quite a number would be purchased for small parks and enclosures; the creature is commercially valuable in that its flesh is an excellent meat for human consumption, and the horns, hides and even hair are articles of commerce. The dietetic value of venison is enhanced by the fact that it is especially adapted to invalids who require a nourishing yet easily digestible food. In a recently published table showing the time required to digest foods, grilled vension is given front rank with boiled tripe and boiled rice, as requiring but one hour for complete digestion, whipped raw eggs, boiled barley and boiled trout, as well as asparagus and a few other vegetables are shown to require an hour and a half; while grilled beefsteak and mutton require three hours for digestion and grilled or roasted veal or pork five hours or more.

Deer horns, although deciduous, are solid processes, produced from the frontal bone, and have the physical as well as the chemical properties of true bone. The material produces much gelatin by decoction and the waste pieces of the horns used in the manufacture of knife handles are either made into gelatin or boiled down into size used in cloth manufacture. At one time deer horn was a prominent source of ammonia. Some thirty years ago in Sheffield, England, some 500 tons of deer horn, representing the antlers of fully 350,000 deer, were used annually in the manufacture of handles of knives and other instruments. Deer skins, as tanned and dressed by the Indians, are manufactured into moccasins, racquets, toboggans and other articles for sale, while deer hide also makes an excellent leather. Deer hair has a peculiar cellular structure and is used in some parts of the world for stuffing saddles, to which purpose it is especially adapted.

It will be conceded, therefore, that under suitable conditions deer farming should indeed prove a profitable industry. In this connection it may be observed that it will, in all probability, be found feasible to exploit both moose and caribou by similar methods, and doubtless also to introduce other varieties of deer, should such be deemed desirable.

The moose, which is closely allied to the European elk, is held to be naturally adapted to domestication. Instances have occurred where the animals have been trained to draw a sleigh, and at one time it would appear that the elk was fully domesticated in northern Scandinavia, and in general use to carry couriers from one place to another. The elk, it is stated, was swifter than the reindeer, and in certain instances covered over 230 miles in a single day, and it is further alleged that the use of the elk was finally forbidden in this region owing to the facilities it afforded to prisoners and criminals to escape, and its domestication consequently abandoned. Moose-hide is so thick and hard that the leather is said to have been known to have resisted musket balls.

No attempts have as yet been made to domesticate the caribou or Canadian reindeer, although these animals differ but little from the Old World species. Some authorities are of the opinion that both the woodland and barren ground caribou are capable of domestication, and it is evident that such a step would be of material benefit in the extreme northerly sections of the Province. In any case, even where reindeer are imported, as has occurred in some instances on this continent, crossing the European species with the indigenous and wild variety would doubtless be found to produce animals of greater strength and size, and the native caribou could be constantly drawn on for new blood as has often been done in the case of wild reindeer in northern Europe and Siberia.

The game farm affords a means of producing annually and comparatively cheaply a quantity of birds and eggs of indigenous or imported varieties. Undoubtedly the indigenous varieties, as a rule, will be found to be the best adapted to the purposes of farming, for already they will be acclimatized and the food most suited to them will be found existing naturally to some extent on the farm, while in addition to these advantages there will be a readier market for the sale of the eggs and birds for sporting purposes, for there will be less risk attending their plantation. In the United States considerable attention has been paid of late to the farming of game birds, the greatest efforts having apparently been put forth in the direction of imported varieties, such as the pheasant and the Hungarian partridge. While these experiments have not in many instances been an unqualified success, the fact that many states and individuals are still conducting them on an increasing scale would serve to indicate that the enterprise has taken firm root and can be expected materially to develop in the future. In New York State, for instance, a sum of $12,000 was recently devoted to the purchase of a game farm, the erection of a suitable plant and the acquisition of a suitable number of birds for stock purposes. Seventy-five acres of this farm have been fenced with woven wire eight feet high and pens built therein. The birds principally dealt with are the pheasant and Hungarian partridge, and it is estimated that the state should be able to supply six thousand or more birds and a thousand eggs each year for propagating and stocking purposes.

The actual cost of running a game farm will depend very largely on the variety of birds raised and the initial expense, of course, of acquiring land suitable to the purpose, as well as the cost of stock birds, but in this Province, at least, it is evident that the value placed on game birds, both alive and dead, is such that there cannot but be a great margin of profit to the farmer. The ringneck pheasant is not, in all probability, adapted to the bleaker portions of the Province, but it has already been demonstrated a success in certain of the southern districts, and there can be little doubt that not only would a game farm dealing in this bird be a profitable investment, but that its cultivation affords a means to the ordinary farmer in those areas of considerably augmenting his income at but little trouble or expense.

A pheasantry may be started with mature birds or eggs, although, as a rule, it has been found more economical in the long run to acquire the parent birds. The price of pheasants varies considerably according to the season, being cheapest at the close of the breeding season, an average cost for ringnecked or English pheasants being, perhaps, $5.00 a pair. Any well drained ground is suitable for pens, but a gentle slope of sandy loam, comparatively cool in midsummer, furnishes ideal conditions. Clay is the poorest soil for the purpose, as it is likely to foster disease. The pens should be provided with plenty of both sunshine and shade and constructed like ordinary poultry runs. Each pen should cover at least 100 square feet, for contracted quarters are apt to induce disease. A small open shed or enclosure at one end of the pen is advantageous in that it provides shelter and a dry dusting place. The floor of this shed should be natural earth, to furnish dust baths for the birds, for dust baths are as essential to pheasants as to poultry, freeing them from lice and keeping their plumage in good condition. Mortar, cinders and plenty of grit should be kept in the shed. Extra communicating pens, alongside those in use, have been found advantageous as, in many instances, a hen, stopping laying in the one, will be induced to resume laying by removal to another, and opportunity is afforded, also, of freshening the ground. The pens and sheds should be kept scrupulously clean. The pheasant is polygamous and the male pugnacious during the breeding season, so that each pen should contain one cock to three to five hens. Eggs should be hatched under barnyard hens or turkeys, for though broody, the pheasant hens are wild, and it has proved difficult to obtain good results by leaving them to hatch the eggs. In selecting a hen for the purpose it is essential that she be free from scaly leg, roup or lice. The young should go without food for the first twenty-four hours after hatching, and at the end of that period, or at least within a day or two of hatching, the hatching box should be removed to the rearing field which may be meadowland, a clover field or an orchard, in which coops are provided. These coops should be at least 30 yards apart so as to allow plenty of territory to the various broods. Suitable food is held to be of the utmost importance, and there are a variety of

opinions on the subject, but in general it may be noted that not only does variety tempt the appetite, but with the chicks the transition from soft to hard food must be gradual. Ant eggs are a most suitable food, but if a sufficient supply cannot be obtained throughout the season, it is better to avoid their use altogether, as chicks are liable to reject other food after being fed on them. Maggots, mealworms, finely ground meat and almost any soft bodied insects are excellent substitutes for ant eggs. For the first three or four days the chicks are usually fed on a stiff custard of eggs and milk, but subsequently more substantial food is added. A good general rule appears to be to vary the food as much as possible and to be liberal in the matter of green foods. After two or three weeks coarser ground food may be supplied safely, and grain gradually increased until the fifth week when whole wheat, barley, cracked corn, oats and buckwheat may be added. Sunflower seeds, boiled potatoes, chopped onion and baked bread crumbs are also useful to vary the diet as the chicks approach maturity.

With other game birds generally similar requirements will be found necessary, varying only in regard to the temperament of the bird and somewhat, also, in regard to the most suitable foods. Both the ruffed grouse and quail have been successfully raised on farms, in some instances on the same land, and other varieties of grouse, such as the prairie chicken, have also been successfully cultivated. It should, indeed, be both feasible and profitable to raise both indigenous and imported varieties of these birds almost throughout Ontario, and it cannot be doubted that more enterprise on the part of the farmers in this direction is much to be desired.

A further field is open to the game farmer and owner of suitable land in the raising of fur-bearing animals. The beaver, otter, marten, mink and silver and blue fox are amongst the animals whose partial domestication would be profitable and doubtless will be undertaken on a considerable scale in the future, but of all fur-bearing animals occurring in this Province the muskrat affords the easiest opportunity for successful exploitation in this direction. The celerity with which the creature multiplies has been indicated in another section of this report, and the rapidly increasing price of its fur renders it almost a certainty that advantage will be taken of suitable localities by individuals and firms to augment the income derivable from such property through its cultivation, as has already been done in certain instances in the United States. The Cedar Point Hunting Club, of Toledo, Ohio, controls 5,000 acres of marsh at the mouth of the Maumee River near Lake Erie. In the winter 1903-4, after the muskrats had been left undisturbed for two years, they were trapped for the benefit of the club. In a single month 5,000 were taken, the skins being sold at 25 cents a piece and the carcasses at $1.00 per dozen. The extensive marshes of Dorchester County, Maryland, are a centre of muskrat production. Formerly the owners of marshes in this vicinity paid little attention to them. Trappers were

allowed to take muskrats wherever they chose and the marsh land could have been bought for less than 50 cents an acre. At the present time some of the marshes are worth more, on a basis of the income derived from them, than cultivated farms of like acreage in the same vicinity, owing to the muskrat. As a rule trapping privileges are leased, and both trapper and owner protect the marshes from poaching. As instancing the values thus attained the following quotation is made from a Bulletin issued on the subject by the United States Department of Agriculture:

"The owner of one tract of marsh informed the writer that he bought it three or four years ago for $2,700. It is leased for half the fur and yielded him in 1909, $890, or about 33 per cent. on the investment. The owner of a small piece of marsh—about 40 acres—bought it in 1905 for $150. Leased for half the fur it has yielded the owner $30, $60, $70 and $100 for each of the four years 1906-1909. . . . The owner of a 1,300 acre tract of marsh trapped it this season with the aid of his sons and secured over 5,000 muskrats, which were sold for $2,300."

It is interesting to note, also, that as a food the muskrat has a place in certain markets, such as Philadelphia, Baltimore and Wilmington, where it is sold as "marsh-rabbit," although no effort is made to conceal its identity, and not only do well-to-do people buy and eat it, but that since the animal is caught principally for its fur and the additional labor of preparing the meat for market is but trifling, it can be sold very cheaply. In Baltimore in 1908 the retail price was about 10 cents each, and the wholesale price about 7 cents each, and the demand at these prices appeared to be considerably in excess of the supply. The flesh of the muskrat was generally esteemed by the aborigines of North America and the early colonists soon learned to eat the animal also. At the present time opinions appear to differ as to its edible qualities, some maintaining that its musky flavor is so strong as to prevent all but the starving from eating it, while others aver that it is game worthy of an epicure with a flavor somewhat akin to wild duck that has been shot in the same marshes where it has fed, or have even compared its flavor to that of the famous terrapin. Indeed, annual muskrat banquets are by no means uncommon with gun clubs in certain of the western states of the Union. The flesh of the muskrat is dark red in color, but fine grained and tender. Care should be taken in skinning it that the fur does not touch the flesh, to avoid cutting into the musk glands and to trim off any subcutaneous glands that may adhere to the meat. Various recipes for either stewing, frying or roasting muskrat can be readily obtained. It is doubtful whether many of these creatures are consumed by white people in Ontario at the present time, but there would appear to be no reason why the carcass of the muskrat should not become an article of considerable commercial value in the Province, and thus tend to increase the profits of those who become interested in its cultivation.

An attempt has been made in this section to indicate the feasibility

of raising and propagating game of many species and varieties, and the great economic possibilities that exist in such enterprises, and it remains, therefore, but to note that the whole matter is of such importance from the points of view of sport, of the perpetuation of game, of the available food supply of the population and of the creation of new and prosperous industries, that it is well deserving of the special consideration of any administration. It would seem, then, that the government might well give the citizens of the Province a lead in the introduction of the system into Ontario, for in no matter which direction applied the undertaking would almost certainly prove highly profitable financially, if due economy were exercised and due precautions taken, and it cannot be doubted that the success of the governmental experiments would be followed by the institution of many similar enterprises throughout the Province.

Recommendations.

Your Commissioner would, therefore, recommend:

(1) That a Provincial Game Farm be established in a suitable locality for the purpose of raising deer; demonstrating the practicability of such an enterprise as a profitable commercial undertaking; and encouraging the establishment of such enterprises by private firms or individuals throughout the Province.

(2) That a Provincial Game Farm be established in a suitable locality to raise, propagate and distribute the indigenous game birds of the Province, and to obtain and distribute the eggs of the same; to deal in a similar manner with such varieties of non-indigenous game birds or game birds which have become extinct in the Province as may be deemed desirable; to demonstrate the practicability of such an enterprise as a profitable commercial undertaking; and to encourage the establishment of such enterprises by farmers, private firms and individuals throughout the Province.

(3) That a suitable area of marsh or other territory, the property of the Crown, be set aside by the government for the purpose of muskrat cultivation, in order to demonstrate the practicability of such an enterprise as a profitable commercial undertaking and to encourage the exploitation of lands for this purpose which otherwise are or would be more or less unprofitable.

Frogs.

A creature of no small economic value is the bull frog which, in various sections of the Province, was once exceedingly abundant. It constitutes one of the favorite foods of certain of the wild ducks and, moreover, is a valuable contribution to the available fare of such highly esteemed sporting fishes as the black bass and mascalonge, while frog legs are generally considered a delicacy on account of their tender flesh and pleasant flavor, and, in consequence, command a good price in the

markets of the Province. Too little attention, however, has been paid to the frog in the past and very rapid depletion of its numbers has been and continues to be effected. In two counties only at the present time is the frog afforded any protection at all.

The main habitat of the frogs is, of course, the marsh. In the breeding season, which commences as a rule as soon as the weather begins to turn warm, and continues apparently until July, the frogs band, and it is during this period that they are most usually pursued, it being claimed by the frog hunters that hunting at other periods of the year would not be a profitable enterprise. The usual time of hunting is the night when the frogs, busily engaged in reproductive functions, are peculiarly insensible to danger, and when, in consequence, considerable numbers of them can easily be secured with the aid of a lantern. The tadpole takes, apparently, two years to mature, and this fact alone would seem to indicate the necessity for affording the frogs at least some measure of protection during the breeding season, for the longer the period of time required by any creature to mature, the more easily will it become exterminated.

The hunting of frogs during the breeding season is harmful in other directions, however, of no little importance. Precisely at this period of the year the wild ducks are breeding in the marshes, and whether on the nest or with the young require seclusion and peace. The advent of the frog hunters in numbers into the marshes can only be calculated to scare and frighten the ducks at this important season, with the result that nests will be abandoned, eggs trodden on and crushed, and some percentage, at least, of young ducks perish or be destroyed, all of which in view of the general diminution in the quantities of ducks throughout the Province is much to be deplored.

It would seem, then, that not only should protection be afforded to the bull frog on account of its extensive economic value and for the reason that it takes so long to mature, but that for the better conservation of the ducks and to permit of their breeding operations being as successful as possible, it is imperative that the frog hunters should be kept out of the marshes for a portion, at least, of the banding season. The exact period of the banding season depends in all probability on the weather conditions to a considerable extent. In many instances it will undoubtedly be in progress throughout the month of April and in many instances, also, continue on into the month of July. It is plain, however, that the market interests and many citizens could be expected to complain if the whole of this period were declared closed to frog hunting, more especially if it be true, as asserted, that the frogs can only be hunted profitably while banding. It becomes, then, a matter of determining reasonable dates for a close season. In view of the fact that the greatest harm will be done to the ducks by the frog hunters during the months of May and June it would seem, perhaps, advisable to select this period for the purpose, and it cannot be doubted that even such partial

protection during the important season of reproductive activity would tend materially to increase the numbers of frogs to the advantage of the frog hunters themselves and of those sections of the community who like to eat them, to the better propagation of the ducks breeding in the marshes, and to the improvement of the food supply of ducks, black bass and mascalonge.

Recommendations.

Your Commissioner would, therefore, recommend:—

That a close season for frogs be declared throughout the Province extending from May 1 to June 30, both days inclusive.

Publicity.

In the Interim Report of this Commission and in various sections of this report attention has been called to the value of the tourist traffic. It has been established that the benefit derived from this traffic affects all classes of the community in that the greater portion of the monies expended by the tourists will remain to circulate in the Province, and it has been shown that the presence of the tourist is calculated to lead to the investment of capital and to the initiation of new and prosperous enterprises in the Province. Undoubtedly the Province of Ontario is exceptionally fortunate in the variety of attractions which it possesses for tourists. In addition to splendid cities and towns, there is an almost unrivalled variety of beautiful scenery. In the winter ice-boating, sleighing, skating, snowshoeing and other outdoor sports and amusements are well calculated to allure the inhabitants of warmer climes; in summer, facilities for canoeing, bathing, camping and a sojourn in the woods in a bracing and healthy climate should afford a sufficient inducement to the dwellers in cities and towns without the Provincial borders to take advantage of them; while in addition to all these things there is still to be secured angling for a number of popular fishes and hunting of many species of feathered and larger game. Moreover, the location of Ontario renders the Province peculiarly accessible to the most populous area of the entire continent. With all these natural advantages for the development of a great tourist traffic it would indeed seem most improvident for Ontario to refrain from attempting their adequate exploitation.

Other provinces and states have grasped the importance of this matter. Maine, for instance, derives an enormous annual income from the tourist, more particularly from the sporting tourist, traffic which has been carefully sought and cultivated for a considerable period of years. British Columbia, proud of her magnificent trout streams and salmon waters, conscious of the attractions afforded by her mountains, her lakes and her forests, by her big and feathered game, has spared no effort to attract visitors from outside, realizing that the monies expended by the

state in compiling useful information and circulating it in illustrated book form by the thousand on this continent and abroad, alike in English and foreign languages, is not a waste of money, but an investment which most assuredly will repay itself many times over not only in the sums actually paid out by the tourists who have been attracted thereby, in the incidental costs of their visits, but in the widespread advertisement it will give to the wonderful opportunities awaiting the sportsman, the settler and the capitalist.

In the yearly report of one of the principal banks operating in Canada, Ontario was stigmatized as the Province of neglected opportunities, in that there lay to hand agricultural and other possibilities, equally, if not more, attractive than those existing in other Provinces, but that this fact was so little appreciated that young people generally left their homes and went west in search of that fortune which was more surely awaiting their energies in their native Province. If the criticism is well founded, as there can be little doubt that it is, the necessity is plainly great that the community should receive enlightenment as to the resources of its own possessions, for so long as the general public remains ignorant of or apathetic in regard to them, so long will their due exploitation remain unaccomplished, their potentialities lie hidden from the world, and knowledge of them abroad be difficult if not impossible to obtain.

From every point of view, then, it would appear that a great need exists at the present time for greater publicity in regard to the resources, possibilities and attractions afforded by the Province. In no one direction, however, would this seem to be more desirable than in the matter of a wider dissemination of knowledge in regard to the climatic, scenic, sporting and other facilities calculated to draw visitors to Ontario.

At the present time little or no effort is made by the Province in this direction, and such information as is to be had on this subject is collected and supplied by railways and other transportation companies directly interested in the tourist traffic. Consequently, in many instances the scenic attractions are unduly magnified, accommodation and comforts somewhat misrepresented and the sporting facilities overstated beyond all reason, with the result that encountering the real, where he had anticipated the imaginary, the tourist is all too often dissatisfied merely because his expectations are not realized. Wardens, rangers, overseers, constables and, in fact, innumerable governmental officials are scattered all over the Province, and it should be a simple matter for the Government to collect and collate all such information as will be desired by, or would be useful to, the tourist. It cannot be doubted, moreover, that the issuance of accurate information on these points in attractive form would very materially swell the numbers of annual visitors from all parts, if adequate provision were made for free distribution both at home in the Province and abroad.

Of all natural resources, for it should be esteemed as such, scenery

is in all probability the most economically profitable, for no material portion of it is lost to the community in return for the cash which it tends to attract. Fish and game, also, constitute a natural resource which should be permanent if properly conserved, and should, therefore, be more highly esteemed than those resources whose exploitation is synonymous for their disappearance. Mineral, once taken from the ground, ceases to be an asset. Much of its worth finds its way abroad in the shape of dividends. Fish and game, however, have recuperative powers, sufficient within certain limits to meet an annual drain without impairing their value. Their greatest economic worth lies undoubtedly in the attraction they possess for the tourist, for the intrinsic value of a few fish, a few birds or some larger animal, as well as the proportionate expense of protecting, or even producing, them, caught or killed by the visitor, is offset many times over by the cash paid by the visitor to secure the sport. No effort, therefore, should be spared to obtain the greatest possible income from these natural resources of scenery, fish and game, which they can be made to produce, and it would seem beyond doubt that the first step towards their adequate exploitation must and should be the collection, publication and free distribution of all possible information concerning them by the Government of the Province.

Recommendations.

Your Commissioner would, therefore, recommend:—

That steps be taken by the Government to secure and collate accurate information concerning the scenic, touring, sporting and other attractions of the Province likely to prove of use to those visiting Ontario and to the citizens of the Province, or to draw visitors to Ontario, and to publish such information in such form and cause its free distribution to be effected in such a manner that the facilities afforded by the Province in these directions will become more widely advertised and known.

A Scheme for the Improvement of the Fisheries and Game Protective Services.

It has been the unpleasant duty of this Commission to report most adversely on the system, the equipment and the efficiency of the Fisheries and Game Protective Services. Attention has been called to the fact that both commercial and sporting fisheries, as well as four-legged and feathered game of the Province are becoming rapidly depleted. The necessity for complete reorganization has been insisted upon. While it has been recognized that undoubtedly the reorganization of the present system will take time to complete and that efficiency can only be attained in all departments of the services through greater expenditures of money, the urgency of initiating reforms while there is yet something

to conserve has been clearly demonstrated. It remains, then, but to outline a general scheme by which the reorganization and improvement of the protective services can be effected.

The main consideration is undoubtedly the creation of an authority with sufficient leisure to master the intricacies of the many problems involved and with sufficient power to initiate and carry through a scheme of reorganization. This matter has, however, already been dealt with and recommendations on the subject made.

In regard to the *personnel* of the outside service, the baneful effects of political patronage and underpayment have been brought to attention and certain recommendations made in regard to them. It has been pointed out that men who are not fitted for their positions or who have to engage in other pursuits to earn a living cannot be expected to make really efficient officers, and that one of the main evils of the present system is that the underpaid overseer or warden is liable to be influenced in the discharge of his duties by business affiliations or personal friendship, or again overawed by considerations of possible harm to himself or property. It has been shown, in fact, that a permanent force of well paid officials is an imperative necessity at the present time.

The Province covers such a wide area that the situation both in regard to the fisheries and game differs widely in the various regions. Two inspectors are at present maintained by the Department of Game and Fisheries, but it can hardly be expected of even such capable and efficient officers as those now occupying these positions that they should be able to fully comprehend the peculiar difficulties occurring in each locality or its individual requirements in complete detail, or that they should be able to see to it that their duties are being properly performed by the various wardens and overseers. In fact, this would be an impossibility for any two men to accomplish. Having such immense areas to cover they can become intimately acquainted with none in the course of their professional duties, and if they succeed in doing so, it cannot but be by hazard of birth or previous dwelling in them, or else at the expense of other districts. It is nevertheless essential to efficient and economic administration that the organization in each area should be perfected and the supervision continuous. To attain this objective, therefore, it would seem indispensable that the Province should be subdivided into convenient areas, and that in each of them there should be stationed an official who should become intimately conversant with the conditions prevailing in it, and under directions from the controlling executive, both organize and supervise the protective services apportioned to it.

The creation of such officials would imply that in each region there would be an officer of superior intelligence and rank, devoting his energies to its particular necessities and directly interested in solving its individual problems. Not only, indeed, would organization be more easily perfected by this means and supervision afforded, but the con-

trolling executive would be kept reasonably well advised of the actual conditions prevailing throughout the Province, which at the present time would appear to be far from being the case, judging from the almost unanimously favourable reports as to conditions furnished by the various wardens and overseers and published yearly by the Department of Game and Fisheries. It would, of course, be essential to select only men of high attainments and adequate qualifications for these responsible positions, and to secure the services of such men good salaries would have to be paid.

Coincident with the appointment of such an officer to a district it would be necessary to furnish him with some measure of reliable, permanent staff, most carefully selected and comprising only men physically, mentally and morally suited to the posts, and with sufficient qualifications of the special nature required to enable them adequately to discharge their duties. Even a numerically small staff of this nature would insure an immediate improvement in the local situation during the period in which the chief officer of the district was studying its problems and planning reorganization. Doubtless the ranks of such staff could be filled to some extent from the men at present employed in this class of work, for that there are many good and efficient officers in the service at present goes without saying, and it is to be noted, also, that not only should these officers be paid a sufficient salary as to ensure the right class of men being obtained, but also that, as their exclusive services would be required and paid for, they could be expected to cover considerable areas of territory which would at once remove them from those local influences which under the present system militate so strongly against the proper discharge of their duties.

A scheme of reorganization as above indicated would have several advantages in addition to those already enumerated. The presence in each area of an officer of superior rank and mentality should materially facilitate inter-departmental co-operation, for such officer would naturally be expected to study the numbers and distribution of provincial constables and fire rangers in his district and to take such matters into consideration when planning local organization. In other words, it should lead to economy in administration. Again, reorganization could be effected without any undue upheaval or disturbance, and over a period of time, for, if it were deemed advisable, the provision of a staff and adequate equipment could be undertaken by districts as funds became available. Moreover, the process of replacing the present officials, where it was decided to dispense with their services, would in any case be but gradually effected. Further, fewer positions with adequate salaries attached thereto would be calculated to attract the right class of men; the wider districts to be covered by each officer would render incompetency more noticeable; and at the same time both the increased area to be covered by the individual officers and the direct personal interest of a chief district officer in the efficiency of his staff would tend

materially to diminish the risks of petty or local favouritism in appointment, or the retention of incompetent or lazy officials. Moreover, once a district had been staffed, organized and equipped, it should be possible to more or less satisfactorily meet the difficulty of fixing open seasons for game to accord with the climatic and other conditions prevailing therein.

If it were possible to separate the protective service of the commercial fisheries from that of the sporting fisheries, and that of the sporting fisheries from that of game, doubtless many of the obstacles to efficient administration would materially diminish, but plainly the maintenance of three separate services would be impracticable on the score of expense, and in addition to this, the areas in which the various pursuits are conducted and the characteristics of the operations themselves are so intimately connected in many instances that it would be almost impossible to apportion the duties to the various officers of each service. Consequently, the three services have to be more or less combined in one. It is apparent, therefore, not only that the district officers or inspectors should be as at home on water as on land and that a proportion of their permanent staffs should be especially qualified in either one or the other direction, but also that it would be necessary in determining the districts to apportion a reasonable and fair proportion of the vast fishing areas of the Province to each. In this regard both the great lake and inland fisheries would have to be considered. It would, of course, be possible to subdivide the provincial fishing and land areas in a multitude of different ways for each of which some advantages could be claimed, but in view of the fact that although some measure of decentralization in regard to the protective services appears to be necessary, this should not be carried to an extreme for reasons, amongst others, of economy. The following allocation of districts is suggested in the belief that it fulfills the main requirements of the present situation:—

(1) The eastern counties of the Province up to and including the counties of Renfrew, Hastings and Prince Edward.

Main Fisheries: St. Lawrence River, Bay of Quinte, and eastern portions of Lake Ontario from Prince Edward County east to the St. Lawrence River, the Rideau Lake system and the Ottawa River.

(2) The counties of Haliburton, Muskoka District, Simcoe, York, Ontario, Durham, Victoria, Peterborough and Northumberland.

Main Fisheries: Lake Ontario westward from Prince Edward County, Kawartha Lakes, Lake Scugog, Muskoka Lakes and Lake Simcoe.

(3) The western peninsula south of and including the counties of Halton, Wentworth, Brant, Oxford, Middlesex and Lambton.

Main Fisheries: Niagara River, Lake Erie, Detroit River, Lake St. Clair, St. Clair River and Thames River.

(4) Counties of Peel, Waterloo, Perth, Huron, Bruce, Wellington and Dufferin.

Main Fisheries: Lake Huron.

(5) Districts of Parry Sound, Nipissing and Algoma and Manitoulin Island.

Main Fisheries: Georgian Bay, North Channel, Lake Nipissing, French River and St. Mary's River.

(6) Districts of Thunder Bay and Rainy River.

Main Fisheries: Lake Superior, Lake of the Woods and Rainy River.

It would of course be necessary for the controlling executive to have at its disposal one or two inspectors of superior rank to the district inspectors and in addition, as pointed out in another section, to have available the means of investigating promptly complaints as to irregularities occurring in any portion of the Province. For this latter purpose a few specially qualified men would have to be selected as secret service agents, for there is unquestionably plenty of work to keep such men busy throughout the year and it would be more economical to maintain them on salary and more satisfactory, than to engage detectives from private firms for the purpose and run the risks of careless, incompetent or unreliable persons undertaking the work.

In regard to the equipment, types of the most suitable craft for provincial purposes were furnished in the Interim Report of this Commission, the approximate cost of the same indicated and the necessity demonstrated for the Province to build and acquire a fleet especially adapted to the work to be performed instead of continuing to lease more or less unsuitable boats or purchasing second-hand craft of inferior qualifications. The expense of so doing would obviously be considerable, but if the expenditure was spread over a period of years this should prove no insuperable obstacle. The system of districts, as above recommended, should, moreover, facilitate the process of determining the actual requirements in this direction, for to insure economy and at the same time efficiency, very intimate knowledge of the waters and conditions prevailing in each locality and district are obviously necessary, while in addition the system itself would afford a simple means of gradually and effectively instituting the improvements necessary in this direction.

Summarizing, then, the scheme as above outlined, there would be a controlling executive with two inspectors and a small number of secret service agents at its disposal, six district inspectors and a permanent staff of indeterminate numbers in each district. If the scheme were adopted simultaneously throughout the Province and reasonably good salaries paid, the additional cost of the personnel over that at present borne would at the outset be approximately as follows:

Two Chief Inspectors, increase in pay from $1,600 and $1,500 per annum, as at present paid, to $1,800 per annum each	$ 500
Four Secret Service Agents, at $1,200 p. a. each	4,800
Six District Inspectors, at $1,500 p. a. each	9,000
A staff of six permanent men in each district, or 36 men in all, at $900 p. a. each	32,400
Total	$46,700

As pointed out already some portion at least of the permanent staff would in all probability be selected from those already holding office, so that a saving would be effected in this direction, and as an increase in the permanent staffs was gradually effected, the salaries of those officers whose services were dispensed with would offset to no little extent this expense, for the higher paid officer would be required to cover considerably greater extents of territory than those now assigned to the numerous and underpaid officials.

The American representative of the International Fisheries Commission submitted to his Government a schedule of the equipment in his opinion necessary for the purpose of adequately enforcing the international fishery regulations in American waters of the great lakes, involving an expenditure of $46,000. An examination of the detail would tend to the conviction that the cost of the boats recommended has been somewhat underestimated by the Commissioner, but assuming that Ontario, which is concerned with practically the whole of these fisheries, should decide to acquire an equipment of equal proportions, thus materially lessening the necessity for the Dominion Government to do so, and assuming, also, that an effective equipment was to be supplied to each overseer where required on the inland fisheries, it would not seem that the total expenditure of building new boats for the purpose could by any possibility exceed $150,000.

In regard to provincial fish hatcheries $60,000 would prove in all probability more than amply sufficient to meet the immediate requirements of the Province in this direction, while, when once the full equipment of the hatcheries on this appropriation had been established, the annual salary bill in connection with such hatcheries could not apparently exceed $15,000, if, indeed, it would even approach that figure.

It would seem that an extensive and entirely adequate plant for a provincial fish agency could be constructed at the various points deemed necessary at an expenditure not exceeding $15,000, and that $5,000 should be fully sufficient to pay the salaries of the necessary officials, while in connection with game farms $30,000 should be ample to cover enterprises in this direction in connection with deer, game birds and fur-bearing animals, and $5,000 amply sufficient to meet the salary bill in connection with them once they should have been fully established; no account being taken of the almost certain profits to be derived from these two enterprises.

Assuming, then, that the reorganization of the personnel was effected as suggested, and, moreover, simultaneously throughout the Province; assuming that the expenditures on equipment, hatcheries, fish agencies and game farms were spread over six years; and including the full running expenses of hatcheries, fish agencies and game farms from the start as though such had already been fully established, the additional cost to the Province during the installation period of six years would be:

Personnel	$ 46,700
Construction of hatcheries (60,000)	10,000
Operating expenses of hatcheries	15,000
Construction of plant for fish agencies (15,000)	2,500
Operating expenses of fish agencies	5,000
Establishment of game farms (30,000)	5,000
Operating expenses of game farms	5,000
Equipment of fisheries protective service (150,000)	25,000
Total	$114,200

At the end of this period, the capital outlay being completed, the approximate increased expenditure over that at present born would, therefore, be:

Personnel	$46,700
Operating expenses of hatcheries	15,000
Operating expenses of fish agencies	5,000
Operating expenses of game farms	5,000
Total	$71,700

To meet this additional charge, if the recommendations contained in this report were adopted, there would be the income derived from a resident hunting license of $1.10, alone estimated at $100,000; increased income from the fisheries owing to the cost of the license being determined by the amount of fish caught, the bonus derived from tenders for fishing licenses, and the licensing of fish buyers; the value of the sturgeon and beaver, recommended to be treated and exploited as perquisites of the Crown; the revenue derived from the licensing of trappers and fur buyers; increased fees from non-residents for angling and hunting privileges owing to a wider system of collection under more efficient supervision; registration fees from visitors to provincial forest and game reserves; and finally that portion of the income derivable from the exploitation of timber or fur-bearing animals in the provincial parks not required for the improvement of their staffs or equipment, for as these parks are maintained in the interests of conservation generally, some portion, at least, of any income derived from them might legitimately be applied to general conservation measures throughout the Province. It cannot be doubted that from all these sources an income would be derived, not only ample to meet all the requirements in the directions indicated, but capable, also, at least when the necessary improvements should have been carried into effect, of furnishing a very substantial surplus revenue to the Province.

Recommendations.

Your Commissioner would, therefore, recommend:

(1) That the general reorganization of the fisheries and game protective services be undertaken without delay.

(2) That an executive, as already recommended by this Commission, be created to have charge of these matters, and that such executive have at its disposal:

Two Chief Inspectors at a salary of $1,800 per annum each, and

Four Secret Service Agents at a salary of $1,200 per annum each.

(3) That for the purposes of the organization and administration of the fisheries and game protective services the Province be subdivided into six districts, approximately as designated in this report; and that an Inspector be placed in each such district, at a salary of $1,500 per annum, whose duty it shall be to study the requirements of the district, plan the organization of the protective services therein on the most economical lines, carry the same into effect under the direction of the chief executive, and be responsible for the adequate supervision of the wardens and overseers in such district and that their duties are properly performed.

(4) That as each of the above administrative districts is created, a staff of not less than six men, at a salary of $900 per annum each, be assigned to the District Inspector placed in control of it, and that an increase of the permanent staff of each district to the numerical strength deemed necessary be carried subsequently into effect by the gradual elimination of the underpaid or inefficient officers and the substitution in their place of others, specially selected and duly qualified to discharge the duties they will be expected to perform; and that such officers receive remuneration at the rate of $900 per annum, be assigned considerably greater territories than those now generally covered by overseers, and be required to devote their whole time and energies to the government service.

ACKNOWLEDGMENTS.

Your Commissioner is indebted to all those gentlemen and corporations mentioned in his Interim Report for continued favors and courtesies:

To Mr. Paul Reighard, of the University of Michigan, for valuable information and the privilege of making use of his maps in this report;

To Hon. W. E. Meehan, Magistrate W. W. O'Brien, Messrs. J. J. Carrick, M.L.A., W. A. Preston, M.L.A., Dr. Smeddie, M.L.A., H. H. Collier, K.C., George Drewry, John Miner and many other gentlemen for encouragement and advice;

To Superintendent Joseph Rogers and many of the provincial constables for courtesies, valuable information and assistance;

To Crown Timber Agents L. E. Bliss and A. O. Watts for assistance and useful information;

To Mr. H. J. Bury for services in the Quetico Forest Reserve, for much valuable information and for courteous permission to make use of various photographs in this report;

To Captain R. Manley Sims, D.S.O., for consistent and conspicuous ability in the discharge of the arduous duties of secretary to this Commission.

Conclusion.

An attempt has been made to delineate in the pages of this report the situation as it has been found to exist in regard to the commercial and sporting fisheries, the game, the fur-bearing animals and the provincial forest reserves. No claim is made that the recommendations submitted would, even if adopted, finally dispose of the many difficulties inherent to the problems connected with these matters, or even that the range of subjects embraced by the report is in any way complete or comprehensive. Undoubtedly, there remains a very extensive field for careful investigation in many directions affecting these questions; undoubtedly, also, many of the matters investigated and reported upon are of so complex and difficult a character that a variety of opinions as to the best methods of treating them satisfactorily must inevitably exist. Within the limits of the available time, however, an effort has been made to deal with as many of the important problems as possible, while in approaching each individual problem and considering its best solution the main objective has been kept steadily in view of ascertaining the fundamental causes of the difficulties or of the conditions and of applying to them the fundamental principles of economy and conservation. An increased expenditure is inevitable if the conservation, even the perpetuation, of the fisheries, fur-bearing animals and game is to be achieved, but the economic importance of these resources is so infinitely great that to permit of their annihilation for the sake of effecting a paltry saving in the annual disbursements for their protection cannot but be adjudged the height of economic improvidence. The situation is bad to-day; in a few years, if matters are not, meanwhile, improved, it must inevitably be worse, if not altogether irreparable. Surely, then, it must be the part of wisdom to take time by the forelock and introduce the reforms which are so vital to the conservation of these resources before it shall have become already too late, more especially so when the means are available for raising the revenue necessary to meet the increased expenditure out of income without unduly or unfairly burdening any one class or profession of the community.

Kelly Evans,
Commissioner.

March 7th, 1911.

INTERIM REPORT

OF THE

Ontario Game and Fisheries Commission 1909-10.

To the Honourable John Morison Gibson,

Lieutenant-Governor of the Province of Ontario.

May it Please Your Honour,—The undersigned, appointed by commission under the Great Seal of the Province, bearing date the seventeenth day of July, A.D. 1909, to makes enquiries, take evidence, and report generally upon all matters appertaining to the game fish, the fisheries and the game of the Province of Ontario, which may injuriously affect the same, and any methods possible to increase their economic and other value to the masses of the people, begs leave herewith to submit an interim report.

The instructions accompanying the Commission direct that the investigation shall include the following particulars:

1. The condition of the fisheries and game within the Province of Ontario and the adjacent waters, including:

2. The advisability of establishing provincial fish hatcheries, including the estimated cost of maintenance and construction, the best methods of operation, and other matters relating thereto;

3. The alleged existence of contracts between fishermen within the Province of Ontario and foreign fish companies and individuals, together with the effect of such contracts (if any) upon the fisheries of Ontario;

4. The matter of foreign fish companies and individuals encouraging breaches of the law on the part of fishermen and others resident in Ontario;

5. The qualifications, conditions of service, skill, efficiency (physical and otherwise), desirable for fisheries and game officials;

6. The condition of the present equipment of the Department, together with the additional requirements (if any) in this regard in the matter of launches, boats, etc.;

7. The advisability of the co-operation by the officers of other departments of the Government, and of other corporations, with the officers of the Department of Game and Fisheries, in assisting in the practical enforcement of the game laws and fishery regulations;

8. Questions relating to the management of the public parks and forest reserves, especially in so far as the tourist sportsman traffic is concerned;

9. All matters and things relating to fish and game which may assist in the efficient management of the Game and Fisheries Branch of the public service in Ontario, or be of economic advantage to the Province.

In entering upon the duties assigned to him, your Commissioner confidently anticipated bringing his labours to a conclusion within the space of a few months, counting upon the proposed International Fisheries Treaty (dealing with the international waters of the Great Lakes, and promulgation of which was promised originally for about December 1st) to remove many of the most difficult and vexed problems connected with the fisheries, and, also, be it admitted, not fully realizing the immensity of the work entrusted to him. Owing mainly to the unexpected delay in the promulgation of the International Fisheries Treaty, and also in a measure to the great range and intricacy of the questions to be dealt with, the necessity of collating evidence and data only obtainable by personal investigation and enquiry in widely-scattered localities, and the desirability of studying various aspects of certain of the questions involved during the different seasons of the year to which they are peculiarly pertinent, your Commissioner has been unable to complete a report on all the questions called for by the Commission. In view, however, of the fact that a close study of the main factors in the present-day situation has decided your Commissioner to urge strongly upon Your Honour the adoption of certain broad principles, involving changes in the Government administrative service and expenditure of public moneys, your Commissioner has embodied the same in this interim report, in order that the principles may receive Your Honour's consideration while the details are being prepared for inclusion in his final report; and, in addition, he deals with such other questions as he considers it expedient to bring promptly to Your Honour's attention.

Wardens and Overseers.

Under the stress of modern civilization the jack-of-all-trades is rapidly being replaced by the specialist in every branch of business and commercial life. It is not sufficient for a man to be a respectable citizen, with just enough knowledge of his profession to enable him to disguise his own incapacity beneath a veneer of self-assurance. To get on in the world, to make good, a man must know his gun—lock, stock, and barrel; his business from top to bottom and inside out. The professional man grasps this, and attunes himself to the situation; the business man realizes it, and, as employer, demands it of his employees. Unfortunately, however, in the machinery for the enforcement of the regulations, designed to conserve for the people some of the natural food resources of the Province, this most important fact seems to have been neglected, or, at least, overlooked.

The organization of the outside service of the Department of Game and Fisheries is not the creation of one man or of one political party. It is, on the contrary, the child of circumstance, nurtured by the partizan spirit of political patronage, and handed down from one Administration to another. Though of late years a very distinct improvement has taken place, the briefest study of the system will disclose the necessity for radical reform.

That the men entrusted by the Government with the enforcement of the law on the waters of the Province or in its woods should be expert sailors or woodsmen, as the case may be, and physically capable of discharging their duties, none will be found to deny; as likewise the fact that to employ those who are not, is, in the efficacy of its pecuniary investment, closely akin to casting gold into a bottomless pit. And yet, owing to the exigencies of political life in this Province, these elementary considerations have been in the past all too frequently disregarded in the selection of officers for the warden services.

That a subordinate officer, entrusted with the enforcement of the game and fishery regulations over a district comprising many miles of lake and woodland, should be 90 years of age; that an officer of the outside service, occupying a position of some importance, should generally have the reputation among persons in his district of being unused to the handling of a boat, and timid of venturing his person on the water; that another fishery officer should be very intimate with the agent of a foreign company, trading as a Shylock among the simple fisherfolk of his district; that a game warden should have no woodcraft, and be afraid to venture alone into the woods; that another should attach himself to a shooting party and indulge with them in the illegal destruction of game during the closed season—these are, to say the least of it, absurdities; and yet they are but a few of the instances brought to the attention of your Commissioner, and are the inevitable and direct outcome of a system in which the most obvious and indispensable qualifications have been brushed aside in favor of a party rosette.

That any man will work, or even devote much time or energy, on that for which he is not paid at least a living wage, is open to the gravest doubt; but where something is offered for nothing, even though that something be the most paltry pittance, the applicants will undoubtedly be numerous, and but rarely of a truly desirable class. The paying of stipends, ranging from $25.00 to $200.00 (stipends such as those with which the pay sheet of the Game and Fisheries Department abounds), appears so closely akin to paying something for nothing that the difference is almost indistinguishable.

In the selection of officers for the outside service of the Department of Game and Fisheries it would seem that the principal general requirements to be looked for are good character and sobriety, health, energy, strength, fearlessness, tact, thorough knowledge of the game laws and fishery regulations, and education sufficient to read and write; and

that, in particular, for the Fishery Protective Service, knowledge of the different fishes, experience in the handling of boats, knowledge of the waters to be patrolled; and, in particular, for the Inland Service, knowledge of the denizens of the woods, their characteristics and habits, thorough expertness in the handling of a canoe, and experience in life in the woods and woodcraft, should be considered indispensable attainments.

Your Commissioner is of the opinion that most of the harm done to the fish, game, and fur-bearing animals of the Province is the work of a comparatively small number of utterly unscrupulous and lawless individuals, for the most part well known in the districts in which they operate, and especially so in the more sparsely settled regions. These persons often terrorize the community to such an extent that information as to their depredations is difficult to obtain; and to expect officers, paid the paltry sums at present given as wages to a large number of the officials of the outside service, to run the risk of bodily injury at the hands of these persons, is ridiculous. That open threats have been made, and are being made, by individuals in regard to what they will do if any attempt is made to interfere with their actions is well known; and your Commissioner would recall the fact that, even within the sound of the bells of the City Hall of Toronto, and but three or four years ago, shots were fired at an officer who was attempting to carry out his duty in stopping illegal fishing in Toronto Bay.

Mr. Oliver Adams, Vice-President of the Headquarters of the Ontario Forest, Fish and Game Protective Association, who has done so much in awakening public interest in fish and game protection throughout the Province, and who took an active part in arousing the citizens of Gananoque and vicinity to the importance of the protection of game fish in the St. Lawrence River, became a martyr to the cause he espoused. When he commenced building operations on a fine residence on an island near Gananoque he was warned by many citizens that he would probably have his house burned by the lawless element. This warning proved to be no vain one, as shortly after he vacated his summer home last year it was burned to the ground, clearly by incendiaries; and, so far, the perpetrators of this outrage have not been brought to justice. The late Colonel Cautley, who expended a large sum of money in erecting buildings, etc., for a summer resort on Minnicoganashene Island, in Georgian Bay, in conversation with your Commissioner, stated that he had often seen illegal nets placed right across the channel near his island as soon as the Government patrol boat had passed, but that he dared not give any information, as he felt that, if he did so, his property would be burned down in the winter.

Many other instances, bearing out the same contention, have been brought to your Commissioner's attention during the tenure of his Commission; but in each instance the information so given was on the condition that the informant's name should not be published, for fear of

what would happen to himself or property at the hands of certain lawless persons in his district.

Your Commissioner believes that the number of persons capable of such outrages is very small, and that the general mass of the public is in no way in sympathy with them and would support the authorities acting with energy and determination in enforcing the law and establishing security of life and property.

The present fishery regulations provide that a licensed net fisherman who is convicted of a violation of the law shall have his license cancelled, and that he cannot receive another for two years. The extension of this principle in cases of glaring offences against the fishery regulations or game laws would seem most excellent and advisable.

In regard to the present system, whereby wardens are paid a percentage of the angling licenses which they collect, the inducement of personal gain, in certain cases, would appear to influence the officer to devote most of his time to this work, to the detriment of other, at least equally, important duties. At the same time, without some such inducement, the collection of the angling tax would, in all probability, not be effectively carried out. As it is, chiefly owing to the fact that the license system is of comparative recent institution, and the machinery of collection, therefore, not yet in thorough working order, many persons escape the payment of the fee. The advantages and disadvantages of the present system are so nearly equal that the only solution would appear to lie in the broadening of the authority entitled to issue licenses and collect the percentage.

In his full report your Commissioner will submit a comprehensive scheme, dealing with the numbers of the wardens that he will recommend, the districts they should cover, and the duties they should perform in the summer and in the winter.

Meanwhile he would most strongly urge upon Your Honour that:

1. No officer of the outside service of the Department of Game and Fisheries be employed on a salary less than sufficient to maintain himself upon it.

2. No officer, employed by the Department of Game and Fisheries on its outside service, be allowed to carry on other work, or engage in any other commercial or business enterprise while so employed, except in cases where such officer is in the employ of, and paid by, some corporation or association, and only commissioned by the Government.

3. The commissions of all officers of the outside service of the Department of Game and Fisheries who are receiving less than $500.00 per annum, or a pro rata amount for temporary services, be cancelled as rapidly as it is possible to reorganize the Outside Survey, in accordance with the principle of fewer and better paid officials.

4. No officer be in future engaged or employed by the Department of Game and Fisheries on its outside service who cannot furnish satisfactory proof of such knowledge and experience, and be of such

physique and good character, as to render him likely to prove of value to the particular branch of the service into which he is placed.

5. The number of persons authorized to sell non-resident anglers licenses or hunting permits be increased sufficiently to ensure these licenses and permits being very easily procurable.

ADMINISTRATION.

While it is possible to improve in detail the present game laws and fishery regulations, they are in the main fairly satisfactory, but it is in the machinery of enforcement that the principal fault lies. The general system of the organization of the Department has been passed down by the previous to the present administration. Improvements have been made, and very much greater energy shown by the officers, within the last few years, but the existing method of appointment of officers of the outside service, as has already been set forth, is radically wrong. Until this system is swept away the Department, in the opinion of your Commissioner, will never reach the point of efficiency desirable for the general welfare of the Province.

The necessity for the protection of fish and game was, of course, felt in the much more thickly populated Republic to the south of us long before it was felt here. In seeking for a solution to the problem of efficient administration your Commissioner has given close study to the evolution of fish and game protection in the United States, and to the results that have followed upon the various experiments which have been made in this direction by the different states. It would be out of place to attempt anything approaching a history of this evolution in a report of this nature, but, seeing that the majority of the states starting on different lines, and working under different conditions, both climatic and temperamental, have converged to and arrived at a fundamentally identical system of administration for the conservation and development of their resources in fish and game, a short account of the Commission and Warden system is herewith submitted.

The offices of game commissioner and state game warden of the present day are not the outcome of spontaneous growth, but the outcome of numerous experiments and modifications necessitated by the growing importance of the subject of preserving game. Originally game protection was left to sheriffs and other local officers, and later, after the appointment of fish wardens, was included incidentally among the duties of that office. The development of the office of state game warden from that of fish warden occupied nearly half a century, and was marked by various experimental steps. Maine was the first state to appoint an officer to protect fish, doing so in 1843, and in 1852 Maine again led the way by appointing special officers to act as moose war-

dens in a number of the counties of the state. In 1858 the example of Maine was followed by New Hampshire, and in 1865 the first fish commission came into existence in that state, Massachusetts following its example the same year, and Connecticut and Vermont two years later.

In Maine the game laws were gradually extended to include game birds as well as big game, and in 1878 the duties of the warden were extended under the new title of County Moose and Game Warden. In this same year the Fish Commission of New Hampshire was reorganized as a Board of Fish and Game Commissioners.

In 1887 Minnesota established the office of State Game Warden, and in 1888 New York that of Chief Game and Fish Protector.

It is not proposed to trace in detail the evolution of the powers or duties of fish and game commissions and wardens, but it is evidence of the superiority of this plan that to-day no less than forty states have adopted it.

There has been, and still is, much diversity of opinion as to the advantage of a single officer over a board. Minnesota at one time entrusted the work to a single officer, the State Game Warden, under the Act of 1887, but four years later established the present system of a Board of Game and Fish Commissioners. Montana, on the other hand, in 1895 established a Board of Game and Fish Commissioners, but three years later replaced it by a State Game and Fish Warden. New York has tried both plans, but has now placed the work in the hands of a single commissioner. This gentleman, Commissioner James S. Whipple, discussing this question at the convention of the New York State Forest, Fish and Game League, made use of the following words:

"In my opinion no commission of five could succeed. No member of it is vitally concerned with success. Each anxiously tries to shift the burden of difficult or intricate questions to the other, and so each seeks to escape responsibility. What we need is one man, one commissioner, as is now the case. That man cannot escape responsibility. He must face each and every question. He knows that he must make good or go under."

At the present time one territory and fourteen states commit the administration of their game laws to commissions, whose membership ranges from three to six. As evidence of the desire to keep these commissions non-political it may be mentioned that in Ohio not more than three of the five members, and in New Jersey not more than two of the four members may belong to the same political party, and Pennsylvania prohibits the appointment of any two of the six commissioners from the same senatorial district. As a precaution against the retirement of all the members at the same time, Ohio, in the Act creating the commission, provided that one should be appointed for one year, another for two years, another for three, and so on, and that at the expiration of their respective terms the successor should be appointed for five years. By this means there is always a quorum familiar with the duties of the Board, and the greatest efficiency is assured.

Pennsylvania has adopted a similar plan. The terms of service of the commissioners vary from two years in Arizona and Connecticut to five years in Massachusetts, New Hampshire, New Jersey and Ohio.

Twenty-three states and territories provide for a single official to direct the affairs of their game department, the title of the office varying somewhat with each state. In Tennessee the office of State Warden is a cabinet position, the Department of Game, Fish and Forestry having been made one of the departments of state government; and the same applies to the office of Fish Commissioner in Pennsylvania. In every state, with the exception of Alabama, where the warden is elected by the people, the officer is appointed by the Governor, and with few exceptions confirmed by the Senate. The term of office varies from two to eight years.

It will be seen, therefore, that the result of experience in the United States is in the direction of creating an office for the control of the fisheries and game removed as far as possible from the influence of party political considerations.

It may be argued that the creation of some such independent authority in connection with this branch of the public service has already been tried in Ontario, as, following the recommendations of the Royal Commission of 1892, a permanent Game Commission was appointed, and remained in force until it was disbanded by the new Game Act. This permanent commission was designed to act principally in an advisory capacity. Its membership was large, its members scattered throughout the Province, and its chairman deeply immersed in other occupations, so that its usefulness was much impaired, and it did not constitute a fair test of the commission system.

The several principal recommendations to follow in this interim report contain in themselves powerful and additional reasons for the adoption of such a course, and your Commissioner would, therefore, strongly urge upon Your Honour the advisability of placing the Department of Game and Fisheries under the control of a small, working commission, somewhat after the model of the Temiskaming and Northern Ontario Railway Commission, but with its membership reduced to the smallest possible number, and, while this interim report will be found to contain recommendations for an increased expenditure of public moneys by the Department of Game and Fisheries, especially in the establishment of provincial fish hatcheries, an adequate equipment for the patrol service, and higher salaries for wardens, your Commissioner would not recommend these expenditures or improvements unless his recommendation of placing the Department of Game and Fisheries under a commission is acted upon by your Government, for the reason that the present system has not produced the most efficient subordinate officers, nor is it calculated to do so in the future, and, failing a supply of thoroughly efficient subordinate officers being assured, he considers the moneys involved in the proposed recommendations would be, in all probability, spent in vain.

THE COMMERCIAL FISHERIES.

Until the promulgation of the uniform Fishery Regulations, under the treaty between Great Britain and the United States, for the control of international waters, it would be futile for your Commissioner to report on this section of the enquiry entrusted to him under the instructions accompanying his commission, but in view of misleading statements which have appeared from time to time in the public press as to the depletion of our Great Lake fisheries not being as serious as alleged, he desires to draw to Your Honour's attention the following facts in regard to the decrease in the numbers of our finest commercial fish, namely, the whitefish. The documents consulted include:

The Federal Government Royal Commission's Report on the Fisheries of Ontario of 1893-4; The Ontario Government Royal Commission's Report on Game and Fish of 1892; The Reports of the Department of Marine and Fisheries of the Dominion Government; The Reports of the Department of Game and Fisheries of the Ontario Government.

In examining the tabulated returns of the fisheries of the Province of Ontario it will be noted that the methods of compilation observed have been somewhat changed from time to time. The earlier reports were so arranged as to render a comparison of the weight of fishes, caught in different years, more easy than the present system, which, while making a comparison of the values in money simple, renders it impossible to get the difference in the weights of the catch of the different fishes without some considerable labour.

Below is given a comparative table, calculated from the Blue Book of the Department of Marine and Fisheries at Ottawa, of 1873, and the report of the Department of Game and Fisheries for Ontario, of 1907:

TOTAL CATCH OF WHITEFISH IN THE GREAT LAKE SYSTEM ALONE.

Year 1873.	*Year 1907.*	*Decrease.*	*Per cent of decrease.*
4,851,872 lbs.	2,499,870 lbs.	2,352,002 lbs.	48

The quantities of whitefish, however, in Lakes Erie and Ontario especially, and also in the upper lakes, were vastly greater some years previous to 1873 than in that year, according to the sworn testimony of many commercial fishermen, given before the Dominion Fisheries Commission of 1893, as the following quotations prove beyond shadow of doubt.

Mr. Albert Hutchins, commercial fisherman since 1850, under oath stated:

"I have fished in Lake Ontario about thirty years for whitefish and trout; the great majority were whitefish, and were caught at Wellington Beach. They were caught very numerously with seines, as

many as 5,000 to 10,000 in one haul during the night; this was in the summer time, in July and June. These were salted or sold on the ground to dealers. I have caught as many in a season as would allow the owners of the seine for their share about $2,000, the other $2,000 would go to the fishermen. Even more than this number were caught sometimes. Fishing was carried on in the fall of the year also. Whitefish were thick also everywhere in Lake Ontario at that time. I have known as many as 90,000 to be taken in one haul in one night. I was present and saw them counted. I have often known from 5,000 to 10,000 being taken, and have taken 40,000 myself in a seine several times. This was in July, at Wellington Beach. Those that were saved of the 90,000 hauled were salted; many of these were lost because they could not be taken care of. There was another haul as large as this taken at West Lake Beach. The net was a 175-rod seine. The fish were wonderfully numerous. But when I left Lake Ontario fourteen years ago there was no whitefish to be had by the fishermen where these great hauls had been made before; in fact, the whitefish fishery had ceased to exist. There was no more of it. I left Lake Ontario to fish here, and a number of other fishermen left there for the same cause."

Mr. John Lang, fisherman and fishdealer, testifying as to the fisheries in Lake Huron about Kettle Point, stated:

"Whitefish were very plentiful in former years; as many as forty or fifty barrels in one haul, say five thousand fish, was an ordinary catch. These fish have fallen off very greatly."

Noah Jolie, a fisherman of forty years' experience, stated that about eighteen years before (1874) he had had two fishing grounds on the Detroit River, and that both grounds produced about 70,000 fish, or an average of about 20,000 per net. At that time, as far as he could remember, there were some fifteen or twenty grounds on the Canadian side of the river, of which some were better and some worse than his. He gave up fishing about thirteen years before (1879) because fish became so scarce that it no longer paid him to continue in the business.

James A. Smith, shipwright and boatbuilder, but formerly for thirty-five years a fisherman and fishdealer, stated:

"Whitefish were so plentiful in Lake Ontario that with one seine—I owned half of it and it was a fifty-rod seine, too—we put up in one month 180 barrels for our net's share. The other men, eight in number, would get the equivalent to 180 barrels amongst them; this was in the month of June, in 1869 or 1870, and was on Consecon Beach. There were other seines fishing also, but probably not so large in extent as ours. The same year, in November, the fish were very numerous, and all larger fish than usual, weighing about two and three-quarters pounds; as many as we could barrel we caught and salted, but a great many besides were lost. Whitefish were so numerous that they were hauled away for manure for use upon farms. The whitefish

were so plentiful that in hauling the seines they could not pull them in on shore; they had simply to dip out what they wanted of the fish with small nets, and let the rest go. The fish were miraculously numerous, but when I left Lake Ontario some fifteen years ago (1878) whitefish were almost exterminated. Four thousand whitefish were many times taken in a haul in one night; salmon trout and whitefish in Lake Ontario were vastly more numerous than they ever have been in the Georgian Bay."

The Royal Commission appointed by Your Honour's predecessor in office in 1892, reported in no uncertain terms on the depletion of the fisheries, as the following quotation will show:

P. 194. "The extent to which netting is carried on is also inconceivable, and the spawning grounds are stripped year after year, until in many places where fish abounded formerly in large numbers there is no yield now at all."

With these figures and evidence it is unnecessary to seek further for proof that the whitefish in Lakes Erie and Ontario existed, within the memory of men still living, in numbers so immense as to be hardly credible to the younger generations of to-day, and that the present deplorable condition, as compared with the past, of the fisheries of the Great Lakes has not been brought about by the unpreventable causes. What these causes were, how it would be possible to change or ameliorate them, and what steps should be taken to make the fisheries of the Great Lakes once again produce a splendid cheap food for the masses of the people, will be taken up in your Commissioner's final report, after the promulgation of the regulations governing international waters, under the treaty between Great Britain and the United States.

Besides the quotation already mentioned, from the Royal Commission's Report of 1892 (Ontario), calling attention to the depletion of the waters, your Commissioner would also draw to Your Honour's attention a recommendation of that Commission as to restrictions in the use of nets, which reads as follows:

"Your Commissioners are of the opinion that pound nets should be entirely abolished in the waters of the Province, and that no gill netting should be allowed except by special permission from the Game and Fish Commissioners."

The quantities of fish can hardly be said to have increased since 1892, and your Commissioner is of the opinion that greater need of restriction exists now than when the recommendations of the Royal Commission referred to were made and ignored.

The action of your Government in not allowing netting in Lake Nipissing and the Thames River has resulted in much good, and your Commissioner would strongly urge the policy being continued, and that netting in inland waters be still further restricted.

EQUIPMENT FOR THE FISHERY PROTECTIVE SERVICE.

Your Commissioner has had the opportunity of inspecting a number of the boats employed by the Department of Game and Fisheries on protective duties, and found that none of them met all the requirements of the work they were expected to perform. They are of widely different speeds and builds. One of them, indeed, the Edna Ivan, employed under charter by the Government, is so utterly unsuited to protective service work that she should on no account be further chartered by the Government for this purpose. Among the smaller patrol craft a very wide divergence exists in regard to size, speed and other qualifications, some of them, in fact, having been constructed by amateurs possessing little or no previous experience in boatbuilding. The fishery regulations on the Statute Books bear witness to the recognition by the authorities of the importance of the fisheries, both on the Great Lakes and the inland waters, to the general welfare of the community, and it is therefore manifestly the duty of the authorities to provide an adequate equipment to ensure the proper enforcement of the regulations governing the fisheries.

It is an accepted axiom, applicable to all great enterprises, that the truest economy lies in the perfection of machinery. Makeshifts, while providing a convenient subterfuge for escaping present expense, but add to the weight of the ultimate inevitable bill, while at the same time striking dangerously close to the roots of present efficiency.

That which applies to the daily life of all commercial enterprises is equally true of great governmental undertakings, and, as the fishery regulations have been framed for the purpose of conserving a great source of public wealth, the more perfect the machinery which has to enforce those regulations, the more true will be the economy of the government policy, and the more profitable and stable its results. One of the most important factors in the machinery of enforcement is equipment, for without adequate equipment the most perfect officers find themselves at a hopeless disadvantage, and their most strenuous efforts are likely to be nullified.

In examining into the question of a suitable equipment for the enforcement of the fishery regulations, it becomes at once apparent that the natural conditions prevailing must exercise a predominant influence on the selection of the same, and a brief study of these will reveal the fact that they can be classified under three main headings:

A. The outer and most exposed portions of the Great Lakes, and places where large tugs and fishing boats operate.

B. The inner, shallower and partially sheltered waters of the Great Lakes and Georgian Bay.

C. The waters of the lesser inland lakes and rivers.

Undoubtedly an adequate protection of our commercial fisheries demands protective cruisers of some size on Lakes Huron and Superior,

as well as the Vigilant on Lake Erie. This tacitly seems to be the admitted duty of the Dominion Government, and should cause no difficulty if operated in conjunction with the new naval policy as a training school for seamen, but, as this Class A type of boat would seem to be outside the scope of the provincial equipment, your Commissioner will not further refer to it.

As regards the classes of boats to meet the conditions of B and C, it is plain that the type of boat that could live, if caught out in the storms of Lake Superior or the Georgian Bay, would not be the most suitable craft for the intricate channels of the Rideau Lake system, while the boat that could fearlessly navigate these same channels would be unable to face the rough seas of the Great Lakes. To be efficient, the Government officers must be able to be out in all weathers when other craft are on the waters, and likewise able to penetrate the shallowest bays and channels where illegal operations can be carried on. Hence the main factor for the boats of Class B is seaworthiness (with as light draught as consistent therewith), for those of Class C, draught.

The next main consideration in the selection of a suitable equipment is the nature of the duties to be performed by the officers. To one may be assigned as his principal duty the supervision of the licenses, nets and operations of commercial fishermen scattered over a great extent of sparsely settled territory, and involving, more or less frequently, the passage of rough or dangerous waters; to the next may fall the task of collecting the license fee from foreign angler-tourists throughout a popular lake and river district, supervising the anglers' catch of fish, while keeping an eye on the narrow channels and creeks of his territory to see that no illegal netting is carried on therein. In cases such as the first, owing to the size of the craft necessary to carry on the work, to secure his safety in storms and rough weather, and to more efficiently discharge his duties, the officer will have to be given assistance. In cases such as the second the officer can, as a general rule, handle the work alone. Hence it will be seen that the boats of Class B would be required to carry a regular crew of two or more, and those of Class C only one.

The third main consideration is speed. The officers should be able not only to move freely about in the district, but also to cover a considerable extent of territory daily. Where the appearance of an officer in any particular locality occurs at regular and well-known intervals, or where, on his appearance, those engaged in illegal operations can upsail and make good their escape without trouble, the usefulness of the officer cannot but be grievously impaired. At the same time it would be impossible for the Government to provide boats for its general service from which the speed freaks of an occasional illegally engaged tourist-angler could not escape if so desired. It would appear, therefore, that the speed should be so adjusted as to enable the officers to cover their territory with reasonable frequency, to give them sufficient free-

dom of movement to prevent their comings and goings being anticipated and discounted by malefactors, and to enable them to manœuvre, on at least an equality of speed, with the average craft with which they have to deal, while at the same time reducing the fuel consumption to an economic minimum.

Great strides have been made of recent years in the construction of all manner of craft, but in no type has the advance been more marked than in that suitable for the waters of this Province. The introduction of gasoline has revolutionized the relation of size to speed, while decreasing the cost both of construction and maintenance. Some prejudice exists in certain quarters against the use of gasoline as a motive power for boats, but this prejudice is not well founded on fact. There are now in existence thousands of gasoline boats of all classes and descriptions, from the sea-going cruisers, which have voyaged to Bermuda and back, to the commercial fisherman's smack with its auxiliary gasoline engine. On the waters of the south, about Florida, there are a multitude of houseboat cruisers and yachts driven by gasoline on the inland waters of this continent, and in fact on inland waters throughout the civilized world their name is legion, so that, in spite of a few serious accidents, it is correct and safe to declare that the ratio of accidents occurring with gasoline engines to-day is no higher than with steam engines. Where the engines are handled by competent men investigation proves them to be efficient, serviceable and economical, and the prejudice against them, as likewise the troubles experienced by some persons with them, are directly attributable to men without sufficient training being placed in charge of the engine. To confide any engine to an inexperienced man is to invite trouble, if not actual disaster, and this is equally true of those whose motive power is steam or gasoline, though not so often attempted with the former as with the latter. In regard to cleanliness and comfort there can be no comparison between the steam and gasoline engine for use on comparatively small boats, as with the latter not only are coal dust and ashes avoided, but, properly handled, there is little or no smell attached to them, while in the matter of available space, the saving secured by the installation of the small gasoline engine instead of the more cumbersome steam engine must be obvious to the veriest tyro.

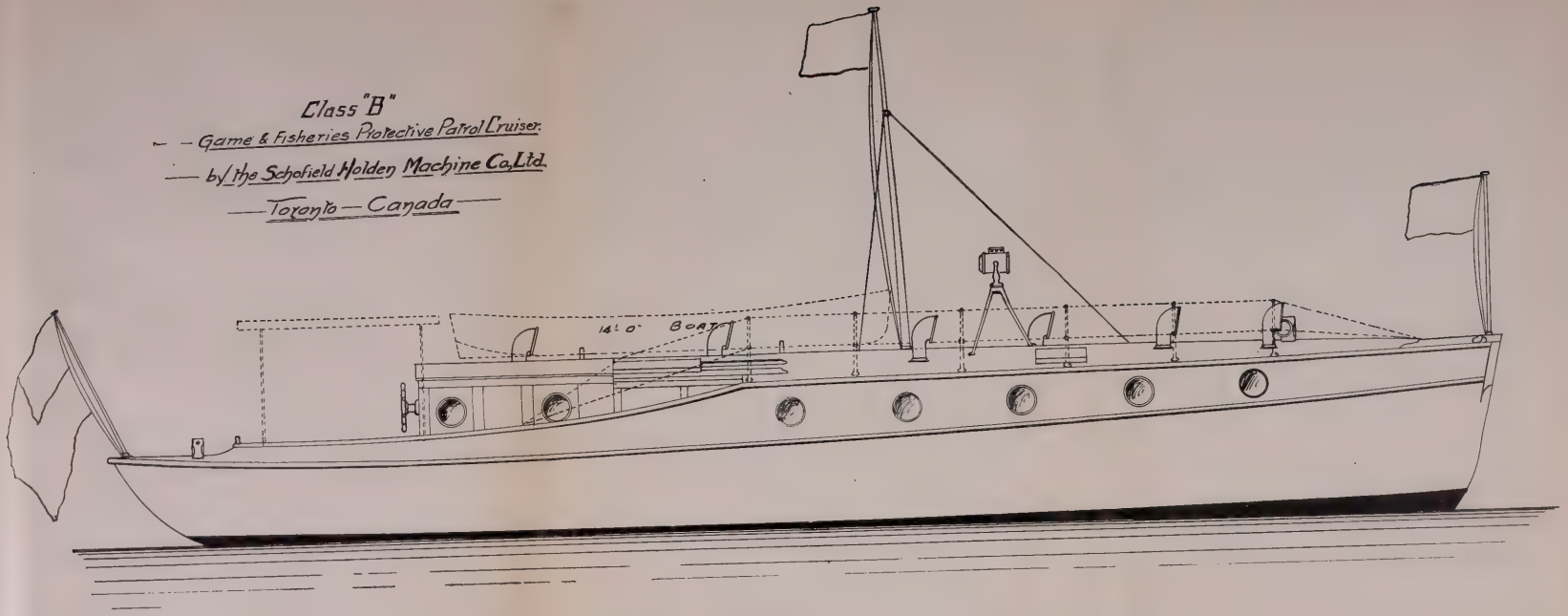
After mature consideration of the whole situation, your Commissioner has come to the conclusion that, in the interests of both ultimate economy and present and permanent efficiency, the time has come to discard the present haphazard and unsatisfactory system of chartering or acquiring boats for the Fishery Protective Service, possessed of only a few of the essential requirements, and for the establishment by the Province of a fleet of boats designed especially for the work they are required to perform. With this in view, and taking advantage of the experience and knowledge of some of the officers of the outside service of the Department, he has drawn up a schedule of requirements for the

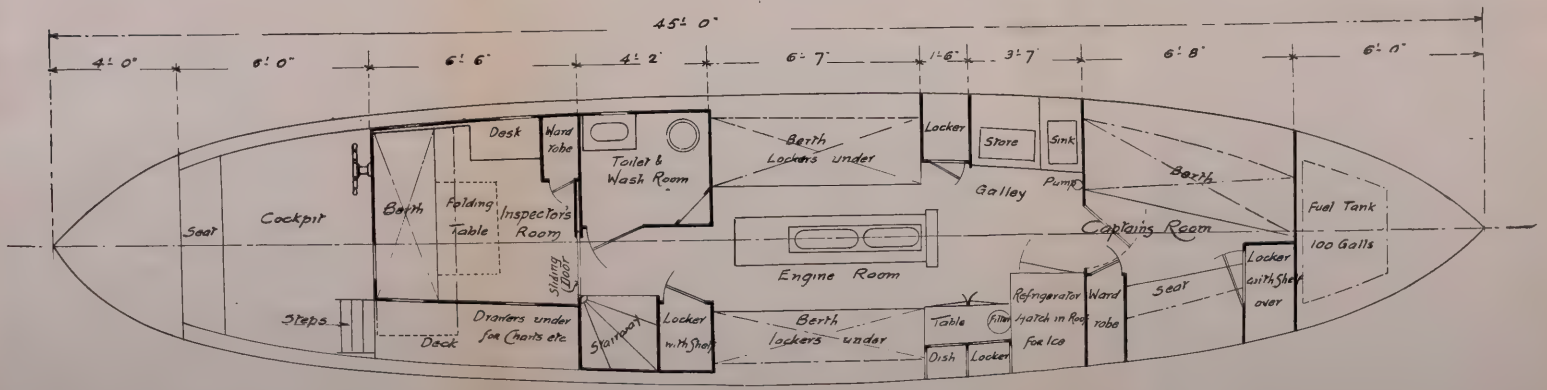
Class "B"

— — Game & Fisheries Protective Patrol Cruiser.

— by the Schofield Holden Machine Co. Ltd.

— Toronto — Canada —





types of craft that appear to him to be indispensable for the efficient execution of the Government service, and has had the same submitted to a leading marine architect, through a prominent Toronto boat-building and engineering firm, with the result that, attached to this report will be found designs of such craft. As the schedule of requirements submitted to the designer contains concisely your Commissioner's views on this subject, he has embodied it in the report, and in so doing would call attention to the fact that the greatest possible economy, consistent with efficiency, was his chiefest consideration, that ventilation and sanitation have been provided for, and that the comfort of the crew, who in the larger boats will be expected to live on board continuously, and in the smaller boats may have to do so occasionally, as well as that of the inspectors and other Government officials who have to make use of these boats on their various duties, has been most carefully borne in mind.

Schedule of Requirements for Fleet of Small Cruisers for the Fishery Protective Service of the Province of Ontario, Prepared by Your Commissioner, and on Which the Designs Herewith Submitted are Based.

There are two classes of boats necessary for the patrol of certain inland waters of the Province of Ontario, and of portions of the Great Lakes.

Class B. Boats suitable for portions of the Great Lakes, and for inspectional purposes elsewhere.

Class C. Boats suitable for the inland waters of the Province, such as Lake Simcoe, the Kawartha Lakes, the Rideau Lake System, Lake Nipissing, etc., and possibly certain portions of the intricate inner channels and bays of the Georgian Bay.

In the construction of both types of boat the greatest economy must be observed as far as the interior fittings and appearance are concerned.

Class B. Six of these boats at least may be required for the waters of the Georgian Bay and portions of Lakes Superior and Huron with the following requirements:

1. *Speed.* Eleven miles an hour under ordinary service conditions.

2. *Seaworthiness.* The lines must be easy, and designed to produce an unusually good sea boat, as, while it is not aimed that they will be patrolling for the most part in the outer waters, but rather that they will be cruising among the islands and in the inner waters, at the same time going from place to place, crossing gaps, etc., they may be called upon to encounter heavy seas.

3. *Crew and Accommodation.* A permanent crew of three men, all protective officers, but taking the duties of captain, gasoline engineer and cook. It is desired to give the gasoline engineer and cook comfortable berths, and to have the captain, if possible, in a stateroom, either

separated by curtains or preferably by a light partition. It is necessary that there should also be a small stateroom, containing a berth, to be used occasionally by the inspectors, the Deputy Head of the Department or other Government officials, and this room to be used by the captain for his charts, office, etc., and also as a mess room. As these boats will be in commission from the opening of navigation until the close of the same, and it is designed that they be kept away from their home ports as much as possible, simple, plain comfort for the crew is required. A gasoline stove should be large enough to have a small oven; locker room should be reasonable; w. c. and a good large wash basin provided; the cockpit accommodation cut down to the very smallest point, as the boat is in no sense a pleasure boat, and besides this, the smaller the better in case of shipping heavy seas, and should be, of course, self-bailing; the cabinhouse above the deck should be strong and capable of standing heavy seas, the same applying to any deadlights or glass windows, for which emergency storm coverings should be provided; the icebox should be part of the refrigerator and should be filled from outside, and it would be well to provide for some form of ice-water filter near the refrigerator; good ventilation must be provided, especially for the galley and washroom, and the designer should bear in mind that in some of the inner channels the heat in summer may be excessive. The bow should not be straight stem, but with an easy curve under the forefoot. It must be borne in mind that these boats will occasionally have their bows pulled up on flat rocks.

4. *Draught.* The draught should be as light as possible consistent with sea-going qualities, but should not exceed three feet.

5. *Dinghy.* The vessel should be planned to take on board a small boat or dinghy, when necessary on account of heavy weather, but as a rule the same would be towed. Davits not desirable, and it would be better, if possible, to provide some form of cradle on top of the cabinhouse. The dinghy should be light, but capable of holding three persons, and will be used to lift illegally placed nets, etc. The designer should therefore furnish lines for these dinghies, taking especial care to provide a good towing boat, which at the same time will fill the other requirements mentioned.

6. *Measurements.* The designer should bear in mind that these small protective vessels are in no sense pleasure craft, and that, while he is not bound down to length or beam, it is desirable that the vessel should be as small as possible commensurate with the requirements outlined, with no eye to show or display, but with the principal considerations, plain comfort for the class of men indicated, seaworthiness and efficiency. From the inspection of other designs it appears to me that 45 feet should be amply sufficient, and I hope the designer may get under this length.

Class C. The type of boat required for this class is more of the hunting launch variety. It is not intended that the men running these

boats should be out over night, but at the same time occasionally it may be necessary for them to be so.

1. *Speed.* The speed of these boats under ordinary service conditions should be ten miles an hour.

2. *Crew.* The crew would consist of one, or possibly two on occasions. The steering gear, therefore, and engine control should be beside each other.

3. *Accommodation.* As these boats will be in commission from the early spring to the late fall, and as occasionally the officers must sleep on board, enough covering should be provided to give two bunks, a very small gasoline stove, a very small refrigerator, and some form of hatch or doorway.

4. *Draught.* The lighter the draught the better for this class of boat.

As in Class B, these boats are in no sense pleasure craft. They should be strong and serviceable, and built with an eye to the greatest economy. They will not tow a dinghy, and must be small enough to manœuvre for the picking up of nets, etc. The forefoot should be cut away and well shod, as they will be pulled up on the shore from time to time.

The views of your Commissioner have been most successfully grasped by the designer and are cleverly set forth in the accompanying blue prints.

The estimated cost of the Class A type of boat is about $4,300.00, and that of the Class C type, $1,850.00, which includes furnishings of all descriptions, sanitary mattresses, ventilators, engines and installation of same, cooking utensils, bedding, cutlery, etc. As regards the type of engine for the Class B boat the following is an extract from the letter of the expert who made the designs for the boats:

"As to the engine power necessary for the Class B boat, it would take about a 4-cylinder, 4-cycle engine of at least 30-horsepower to get the speed, and a 40-horsepower would be preferred. I would hesitate to guarantee eleven miles with any lesser power than the above with so heavy a boat, as, by my figures, a boat of this size and displacement, about 16,000 pounds, would go at the most 11.05 miles statute with a 24-horsepower engine, but this is too small a margin to give any guarantee on. I would prefer to place a 30-horsepower, which would give ample power and would last longer, because it could be run slower. Using this engine, a speed of 12.20 miles would be realized."

With regard to Class C boats, a Toronto firm of boat and engine builders writes:

"With regard to the 25-foot boat, we believe a 2-cylinder, 15-horsepower of our own make would give the full ten miles an hour, and we will guarantee this engine to stand up under the most exacting strain and under all conditions. Perhaps it would be well to mention the fact

that with our muffler, and under water exhaust, this outfit will be absolutely noiseless, and, if used at night, the protective officers can approach to within a very few yards of poachers, etc., without being heard. It appears to us that this ought to be quite a feature for this particular service."

In recommending these types of boats for the Fisheries Protective Service your Commissioner only does so with the proviso that the engineers of the larger class, and the officers in charge of the smaller craft, shall hold certificates of proficiency from a reliable firm of gasoline engine manufacturers, and that no inexperienced or untrained man shall be allowed to handle them. This would, of course, entail some of the men having to pass some weeks in the shops, but the advantages accruing in immunity from breakdowns and general care of the engines, would more than compensate in the long run for any slight expense or inconvenience incurred, and the adoption of such regulation would be in the interests of true economy.

In this interim report your Commissioner does not deal with what, in his opinion, should be the full equipment for the Province of boats of the types indicated. He has, however, selected an area, Georgian Bay and portions of Lake Superior and Lake Huron, as one which he considers to be urgently in need of an improved Fishery Protective Service.

He would recommend to Your Honour that six (6) boats of the Class B type be acquired by the Province and be stationed on the area above mentioned, with the following apportionment of patrol districts:

1. The easterly portions of Lake Superior to St. Joseph's Island.

2. From St. Joseph's Island to the west end of Georgian Bay about Killarney, taking both sides of Manitoulin and the Ducks.

3. Killarney to Point au Baril.

4. Point au Baril, taking in the rest of Georgian Bay, down to Penetanguishene.

5. Penetanguishene to Tobermory, including Cove Island and surrounding islands.

6. Tobermory down to Goderich.

For these boats he recommends a crew of three, all of whom should be appointed deputy overseers, to consist of:

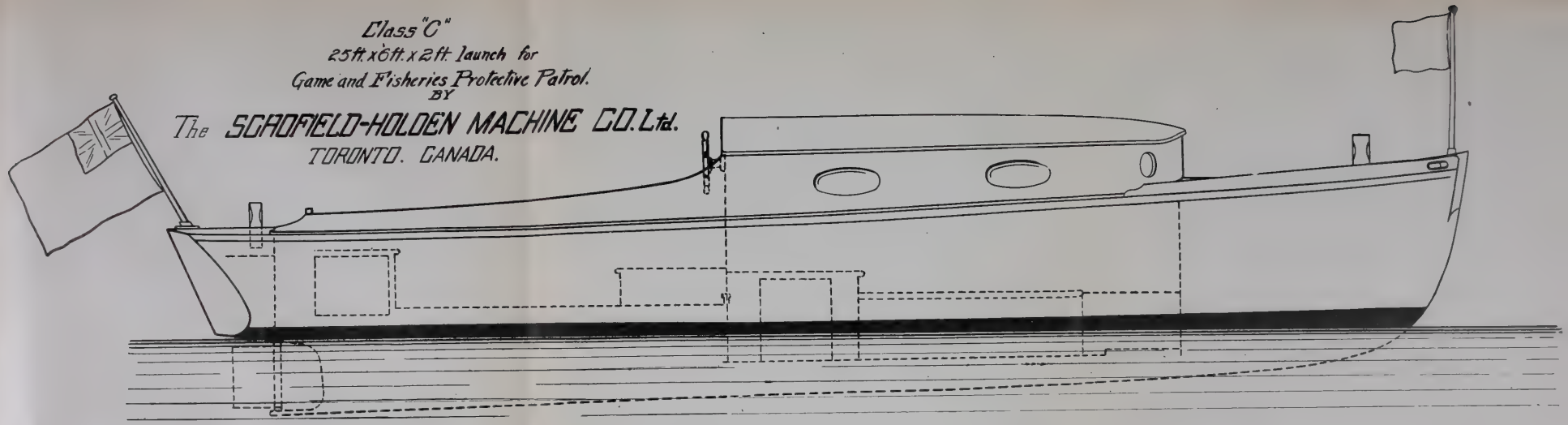
A captain, who should have a thorough knowledge of the waters in which he is to cruise, previous experience as a professional mariner and, if possible, in the handling of small boats, and be used to taking command.

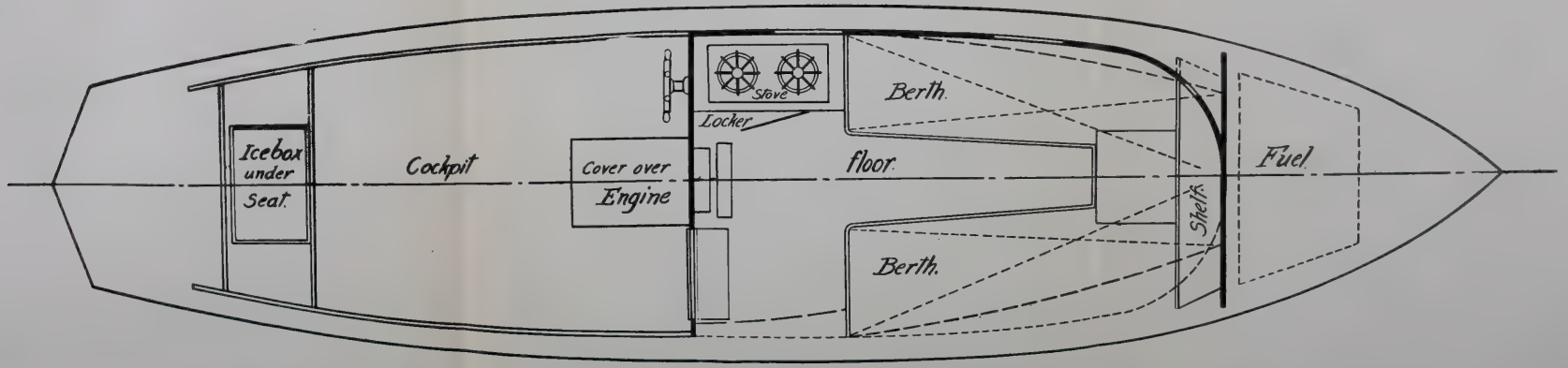
An engineer, who shall have a certificate of proficiency from a reliable firm of gasoline engine manufacturers.

A cook who shall have had reasonable experience as such, be prepared to act as general utility man, and at the same time be experienced in the handling of oars, and of sufficient intelligence to undertake, when necessary, the duties of his office as deputy overseer.

All three men must possess the attribute of personal fearlessness,

Class "C"
25ft. x 6ft. x 2ft. launch for
Game and Fisheries Protective Patrol.
BY
The SCHOFIELD-HOLDEN MACHINE CO. Ltd.
TORONTO. CANADA.





and be prepared to discharge their duties conscientiously in the face of inclement weather or other personal risk, besides such qualifications as the dignity and exigencies of their office demands, such as physical fitness, tact, and a certain amount of education.

In regard to salaries, your Commissioner would recommend that the captain be paid $60.00, the engineer $55.00, and the cook $45.00 per mensem, in addition to receiving board whilst the boat is on actual service and away from the home port, and at these figures he is confident that no difficulty would be experienced in obtaining the services of really competent and suitable men.

The initial cost, therefore, to the Government of this recommendation will be approximately $27,000.00.

The cost of maintenance, assuming that the captain is a permanent official, and employed during the close of navigation on other protective duties inland, and that the engineer and cook are employed only during the seven months that the boats are in commission, will be approximately:

Salary of Captain	$720 00	$4,320 00
Salaries, Engineer and Cook (7 months)	700 00	4,200 00
Board, 3 men for 30 weeks $10.50 per week	315 00	1,890 00
Gasoline, oil and accessories, allowing 5 hours' run per diem, 6 days per week, for 30 weeks	500 00	3,000 00
Minor repairs, say	100 00	600 00
Totals	$2,335 00	$14,010 00

It must be understood, however, that this sum is not an increase over and above existing expenditures, for the salaries of all the fishery overseers for this district, the wages of the help assigned to them in certain instances, their board while absent on patrol, their mileage allowance, the hire and repairs to their craft, etc., must all be set against it. Disbursements of this nature for the districts in question, according to returns already presented to the House, would appear to amount approximately to $13,000.00.

As regards the class C type of boat, your Commissioner's full report will contain a recommendation as to the numbers of these boats required by the Province and the districts that should be assigned to them. Pending the submission of this report, he would recommend that no other type of boat should be acquired by the Government for use on the inland waters of the Province, and that a few of them should be at once ordered and put in commission as soon as possible for service on the waters of the Rideau Lake System, the Kawartha Lakes, Lake Nipissing, Lake Simcoe, etc. He would, however reiterate that no boat of this type should be handed over to a warden or overseer until such warden or overseer has procured a certificate of proficiency in the working of the engine, preferably from the firm installing and guaranteeing same.

Fish Hatcheries.

In dealing with this question it is taken as an axiom that it is the duty of the state to conserve for the people, and if possible improve, sources of food supply, and that the importance of an abundant supply of fish food ranks second to none.

Ontario has been endowed with exceptional advantages for obtaining a liberal supply of fish food, owing to its position on the Great Lakes, the magnificent lakes scattered throughout its interior, and its numerous rivers and streams; but, owing to many causes, chief of which may be said to be forest destruction, pollution, and over-fishing, and the fact that the commercial fishing is practically controlled by a foreign corporation, not only are the people of Ontario deprived to-day of an abundant supply of cheap fish food, but what is far more serious, the fish food supply of the future is seriously threatened, unless immediate steps are taken to counteract existing conditions. When the rapidly-increasing population is taken into consideration, and the fact that most of these people come from countries where they have been accustomed to rely on cheap fish as one of their principal foods, the importance of the question to the future welfare of the community can be realized.

In this regard it will not be out of place to quote a passage from the report of the Commissioners of Fisheries and Game of Massachusetts, which very clearly sets forth the reasons for the artificial hatching and rearing of fish:

"The practice of maintaining and protecting the fisheries of public waters at public expense is of long standing, and is firmly established in well nigh all densely-populated states and countries as both expedient and profitable Two definite methods are in vogue:

"1. The regulation of fishing for the purpose of protecting the adults, either *(a)* during the breeding season, or *(b)* in cases where the demand exceeds the natural supply; either by reducing the number of fish taken during the year, by limiting the catch, or by limiting the number of days upon which fish may be legally taken—*i. e.*, a close season—or, again, by prescribing how and by what apparatus fish may or may not be taken.

"2. The artificial hatching and rearing of young fish, and subsequent stocking of the water by the liberation of fry just hatched or of one- or two-year-old fish.

"The purpose for which such laws are instituted is absolutely correct. If the adults of both sexes are not protected, the number of fertile eggs laid is immediately reduced. Then necessarily follows a decrease in the number of the young hatched and a proportionately smaller number of immature fish. Observations indicate that in a natural trout brook, undisturbed by man, an optimum population of all classes of life is established; enough insect larvæ, adult insects, worms, crustacea, and small fish of various species are present to furnish food for a rather con-

stant number of young trout. Further, practically enough large adult trout are present to eat at least 90 per cent. of the trout fry before these young reach the breeding stage, and to furnish a number of offspring practically just sufficient to furnish food for themselves and similar large fish. Thus a surplus of not more than a pair or two comes to maturity out of the hundreds of annual progeny of each pair of breeding fish, to replace the old trout which pass on through accident or senile decay.

"When, however, man appears, and a considerable number of the breeding fish are removed by him, the most important consequence is a sudden diminution in the number of eggs laid and a corresponding diminution in the number of fry hatched; consequently, a relatively larger proportion of young fish, which are destined to go as food for the 'big fellows.' A two-pound trout, for example, requires a certain weight of animal food per day. He will persistently hunt until this amount is secured and his voracious appetite is satisfied. If, then, only a relatively small number of small trout are present, it is possible that every one of these may thus fall victims; and not alone an actually smaller number, but even no surplus fry, may remain to grow to become breeding adults. When this occurs the trout fishery in that brook declines, and the waters soon become occupied by less valuable fish, or else the stream remains unproductive, yielding either nothing to man, or, at least, less than its normal productive capacity. * * * The necessity of meeting these conditions has led to biological studies which prove the following facts of economic importance:

"1. More trout fry can be secured by artificial impregnation of the egg than are ordinarily hatched under natural conditions.

"2. The trout fry can be reared artificially in immense numbers, with less mortality, than in nature.

"3. By an increased quantity of food the rapidity of growth may be accelerated, and by substitution of an artificial food in place of young fish a greater weight of trout may be secured at less expense."

In the United States, not only the Federal Government, but almost all the individual states, are increasing the yearly production of fish by means of enlarged or additional hatcheries. An idea of what is being done in this direction may be gained from the following figures, taken from the thirteenth annual report of the Forest, Fish and Game Commission of the State of New York:

SUMMARY OF FISH DISTRIBUTION FOR THE YEAR ENDING DECEMBER 31ST, 1907, IN THE STATE OF NEW YORK.

Brook Trout	1,815,950	Frostfish	3,100,500
Brown Trout	1,051,750	Maskalonge	5,000,000
Lake Trout	8,758,900	Pike Perch	36,855,000
Rainbow Trout	822,100	Shad	566,100
Small Mouth Black Bass	11,000	Smelt	100,000,000
		Tomcod	65,600,000
		Whitefish	15,510,300
Total Game Fish	12,459,700	Total other fish	226,631,900

In regard to fish, protection means both preservation and propagation. The remarkable fecundity of the fish is an ever-growing amazement to the student of ichthyology. The ova are smaller than in any other class of animal, yet the ovaries in many fish are larger than the rest of the body. Taking advantage of this fecundity, with the aid of modern science and appliances, it should be possible to maintain in our Great Lakes and other waters the approximate balance of fish that nature intended, which, as before pointed out, is in all probability the optimum—that is, always provided that the system of artificial propagation works hand in hand with reasonable protection of the adults of the various species during the periods that they are engaged in the reproduction of their species, for to rely on artificial means alone to accomplish the work of nature is to court disaster.

In this Province a close study should be given to the selection of the most suitable varieties of fish for the different inland waters. As an illustration of this may be quoted the salmon trout of the Great Lakes. This most excellent food fish, when planted in the confined areas of our lesser lakes, never seems to attain the same game qualities as the species indigenous to the particular lake; neither is their flesh, as a rule, so palatable. Many of our inland lakes have salmon trout peculiar to themselves, and it would seem well, under any system of provincial hatcheries, to make provision for maintaining these varieties and testing their suitability for surrounding waters.

It has been impossible, in view of the many questions that have presented themselves to be dealt with by this Commission, to accumulate sufficient detailed information on the establishment and working of hatcheries on the most modern, practical, and economical basis, to draw up a scheme for provincial hatcheries to be presented with this interim report, but such a scheme will be prepared and presented with the full report at a later date.

Meanwhile, your Commissioner would most strongly urge upon Your Honour the adoption of the principle of provincial hatcheries, to be scattered throughout the Province, in locations selected with a view to the easy gathering of the spawn, and general facilities for distribution over the area to be fed by each, the whole system being so devised as to deal with all classes of food and game fish, and fish known to be the natural food of same, as it is only by maintaining the balance of nature that the best results can be obtained.

Possibly no enterprise in the world is so dependent upon the skill, faithfulness, and enthusiasm of those in charge as that of fish hatcheries. The work of a whole season may be ruined and the expenditure of considerable sums of money wasted, by a few hours' negligence. Ontario is placed in the happy position of being able to take advantage of the experience of, and expensive investigations undertaken by, not only practical hatchery men and state fish culturists, but also by scientific university professors and experts, in the United States and other countries.

It must, however, be realized that in starting hatcheries of her own, the Province has not at present the necessary *personnel*, and should most certainly not commence experimenting with amateurs; but, rather, should take up the art at the point it has now reached. In due time Ontario citizens will be trained, and will acquire the necessary skill; but for the first hatcheries it is obviously essential to obtain the services of non-residents who have had long, practical experience in the erection, maintenance, and general operation of the different forms of hatcheries.

Bass Brooderies.

That Ontario already has a large tourist traffic, coming in from outside and attracted by the angling, it is only necessary to look at the returns of the non-resident anglers' tax to realize; and that this tourist traffic can be developed into one of the largest economic factors in the prosperity of the Province, provided good angling facilities are forthcoming, few who have knowledge of the geography of the Province, with its vast areas of forest lands and streams, unsuited to agriculture; its magnificent lakes and waters, offering alike beautiful scenery and a splendid climate, and its ever-growing transportation facilities, or who have studied the development of the State of Maine, where it is estimated that the tourist traffic brings into the state yearly a revenue of twenty-five million dollars, would be prepared to deny. A study of this question will reveal the fact that in this Province, as an attraction to anglers of all classes, our own citizens, as well as those from other provinces and states, the black bass stands in a class by itself. Its importance, therefore, from the point of view of developing the tourist traffic of the Province, as well as of affording a healthful recreation to our own people, cannot be overestimated.

The black bass, however, differs from the majority of fish, in that it cannot be forced to yield its eggs, or fertilize the same; and hence ordinary methods of artificial propagation, as used in hatcheries for other varieties of fish, are unavailing. Moreover, compared with other fishes, the black bass produces a small number of eggs, the number varying from about 2,000 to 9,000. A system has been devised by which use is made of small ponds, cleared of other fishes and injurious matter, for the purpose of inducing the bass to breed under normal conditions; and the young, resulting, are then carefully nurtured and reared, until in a suitable condition for transplantation.

In view of the vast numbers of bass that are taken out of the waters of this Province yearly, the comparatively small number of eggs produced by the female and the improbability, to say the least of it, that, in the small lakes and rivers at least, the present supply will be maintained unless special measures are taken to increase the propagation, your Commissioner would strongly recommend the adoption of the principle of bass control ponds, to be scattered throughout the Province in suitable locations; and though time and opportunity have been insuffi-

cient to enable him to draw up a scheme for presentation with this interim report, such a scheme will be drawn up and be presented with the full report of this Commission at a later date.

Co-operation.

In the enforcement of laws the good-will and support of the people is a most important factor, for no government can afford to maintain indefinitely a sufficient force of officials to ensure the obeying of laws of which the general public does not approve. Most particularly does this apply to the enforcement of the game laws and fishery regulations of this Province on the public waters and wild lands. To patrol these vast areas closely would entail an army corps of officials and an expense far in excess of the funds at the disposal of the treasury; while to patrol them with a limited number of officers implies wide districts for the officers to cover, and consequently a greater dependency on the people themselves, not only to obey the laws, but to demand their observance by others, resident in or visiting the localities in which they live.

There is no more misguided policy for a government than to have laws on the statute book which it cannot, or does not, enforce, for connivance at infractions of the law is synonymous with connivance at public moral deterioration.

Hence, in reviewing the question of possible co-operation by officers of other departments of the Government, and other corporations, as called for in the instructions of his commission, your Commissioner deems it his first duty to call the attention of Your Honour to the urgency of enlisting the co-operation of that greatest of all provincial corporations, the public of Ontario.

That the laws and regulations in regard to fish and game of the Province are sound in principle your Commissioner is convinced; as likewise that the great mass of the people are law-abiding, and prepared to support the enforcement of the laws once they understand what they are and the purposes for which they have been made. Unfortunately, however, investigation has disclosed to him the fact that not only is there considerable vagueness in the public mind as to the provisions of the laws and regulations, both in their requirements and in their administration, but also a very widespread misapprehension of the purposes for which these laws and regulations have been framed. Unconscious violations of the law are of common occurrence; magistrates all to frequently display their ignorance of its provisions in unauthorized total or partial remissions of its penalties, and the commercial fisherman, the settler, and the pothunter appear more often than not to view those resources of nature in which they are interested as their own peculiar birthright and possession, to be squandered at their pleasure, without regard to vested public rights or to their future economic value, holding, indeed, in many instances that all restrictive laws and regulations are but the device of an unrighteous and selfish band of individuals, known

to them as sportsmen, to steal their birthright for themselves. The general public, meanwhile, remains dull and apathetic, merely because it does not appreciate the greatness of the issues at stake.

The awakening of the public to the importance of these issues not only would ensure public co-operation, but would carry with it comprehension of the value of the natural resources of the Province on the part of its greater corporations, and a desire to assist in developing and exploiting their almost boundless possibilities. Specific education is an important means of awakening the public sentiment, and such education must comprise a lucid exposition of the economics of the questions involved. The public must be taught to understand that the fishery regulations and game laws have been devised in their own interest, and must be encouraged to take pleasure in conforming to the same; magistrates must be instructed to learn and enforce the provisions of the laws; but, above all, it is important that the general public, together with the settler, should realize that the living deer is many times more valuable to them than the same deer dead; together with the agriculturist, that the birds of the air are the farmer's best friends; together with the commercial fisherman, that the capture of fish in the season devoted by nature to reproduction but spells ultimate and utter depletion.

The blue books of the country contain carefully-prepared statistics, giving full information as to the amount of coal and other minerals mined, of cereals raised, of butter and cheese manufactured for export, etc., but one source of wealth possessed by the Province of Ontario—as well, in fact, as by most of the other provinces of the Dominion—is not included in these returns. The tourist traffic is the source of wealth referred to.

In several countries the value of this traffic is recognized and understood, not only by the authorities, but by the general public also. Possibly the best example of this is the Republic of Switzerland, where attractions of mountain scenery, an invigorating climate, and winter and summer sports draw thousands of tourists annually, who leave vast sums of money behind them, to enrich not only the hotels, which may be numbered by the thousand, but to circulate freely among all classes of the population.

The tourist traffic of Italy, attracted by its wonderful climate and by the historic associations and art collections of its many beautiful cities, is enormous, and its importance is realized by the authorities and people alike.

As an example of the value of fish and game as an attraction to the tourist no better case can be quoted than that of the State of Maine.

In 1867 a commission, appointed by the State Legislature, made an exhaustive enquiry into the conditions prevailing then, and the report submitted stated that the inland fisheries were practically valueless, there was no moose in the state, and deer in only one small district. This condition had been brought about, not by the visiting sportsmen,

but by the residents themselves, the game having been shipped for commercial purposes to the larger Eastern cities. After this report was received, the Legislature passed very strict laws, which were at first enforced with great difficulty, but which in the end won public support. In the year 1902, in order that the Legislature might be well advised as to what the tourist traffic amounted to, the state authorities carried out a summer census of all the visitors in the interior portions of the state. These figures showed that 133,885 persons came into the interior portions of the state, the principal attraction being the excellent fishing and shooting provided.

Two years ago your Commissioner enquired from Hon. L. T. Carleton, State Commissioner of Fisheries and Game, whether this traffic had increased, and Mr. Carleton was good enough to take the question up with Colonel Boothby, General Passenger Agent of the Maine Central Railway, and this official stated that, from statistics in his possession and from other sources of information, he was of the opinion that quite 250,000 people came into the interior portions of the state during 1907, attracted principally by the fishing and shooting.

Senator Frye, a well-known statesman, has stated that in all times of financial depression the State of Maine feels the conditions less than any other state in the Union, owing to the fact of this sportsman-tourist traffic, which at these periods does not seem to shrink as might have been expected.

Officially, the authorities of the State of Maine estimate the amount of money left behind by each individual who comes into the interior portion of the state at an average of $100.00. Those who have studied the question are of the opinion that this is a very conservative estimate; and, if it be accepted as a basis, it will be found that, taking the Government statistics for 1902, there would have been left in the state that year over thirteen million dollars; and, if the figures of the railroad official are accepted for 1907, the gigantic sum of twenty-five million dollars would be the result of the tourist traffic for one year.

The Province of Ontario is very happily situated, geographically, to take the fullest advantage of the possibilities inherent in its game fish and game as an attraction to the tourist. It lies within easy distance of the populous and ever-growing cities of the State of New York, and is as easy of access to the residents of the Mississippi Valley as is the State of Maine.

Some little prejudice exists among a portion of the population of the Province in regard to the influx of visiting sportsmen, the idea being that, should great numbers come in, the sport will be ruined. On reflection, however, it will be seen from the history of the evolution of this class of traffic in the State of Maine that this belief is not founded on fact, for, as has already been pointed out, in 1867 the game and fish of the state had practically disappeared, not through the action of visiting sportsmen, but through the slaughter carried on by the residents them-

selves; but, once the public became advised of the value of this attraction in the development of the tourist business, such splendid protection was furnished that to-day not only is twenty-five million dollars attracted annually to the state, but the residents themselves obtain much better fishing and shooting than ever existed in the state before.

The returns of the Department of Game and Fisheries of the Province of Ontario show that from the non-resident anglers' tax of $2.00 per head approximately $17,000 has been collected during the year. It must be borne in mind, however, that this license fee has only been collected for three years, and that the machinery for its collection is not yet perfected; and, indeed, at the present time it may fairly be assumed that only about one-half of the possible amount is actually collected. Then, also, it should be realized that this $17,000 direct revenue means an indirect revenue to the Province of something approaching $850,000.00, taking the average used by the Maine officials as a basis of calculation, namely, $100.00 per capita. It must also be borne in mind that for one person who pays this fee there are, on an average, one or two members of the family who do not care to angle, and who, therefore do not take out any license to do so, but who will none the less be spending their pro rata amount in the Province.

From information in the possession of your Commissioner, obtained from railroad officials, hotel proprietors, etc., he estimates that quite three million dollars comes into the Province annually, which would not be brought in if there were no angling or shooting; and, further, your Commissioner is of the opinion that were the fish and game of the Province to be seriously considered from their economic aspect by your Government, the public, and the great financial institutions, such an improvement would take place in the sport, through the establishment of hatcheries and adequate general protection that the sum referred to would be immensely increased. The State of Maine is only about one-eighth the size of the Province of Ontario, and there is no reason why the immense sums derived from its tourist traffic and now enjoyed by that state should not in the course of time, and by intelligent effort, be equalled, or even surpassed, in the Province of Ontario, the free circulation of which would mean the building of numerous hotels, improved railway and steamboat transportation, increased value of real estate, employment for thousands of registered guides, and the development generally of the machinery to handle a quarter to half a million annual summer visitors.

The scarcity of ready money among the poorer settlers in the back townships is admitted, and no manual labour is better paid that that of guide or oarsman, employed by visiting sportsmen; and, were the settlers more alive to the opportunities of obtaining considerable sums of money by taking up this work, your Commissioner believes such settlers would become interested in the protection of fish and game in their neighbourhood, and realize that its greatest value to themselves is as

an attraction to the visiting sportsmen. It may be of interest to note that no less an authority than Hon. L. T. Carleton has estimated that the value of a moose running in the woods is quite $500.00, whereas the same moose dead, and looked upon from its food value alone, is worth only a fraction of this sum.

The value of fish and game from a sentimental point of view is of doubtful importance in this commercial age, but your Commissioner would point out that, in addition to the arguments above set forth, the health of the citizens of the more crowded centres is admittedly much improved by a holiday spent in the woods and on the water, and that the attraction of fish and game to draw city folk countrywards is of importance to the body politic from this point of view.

He believes that were the facts and figures above given more thoroughly understood by the masses of the people of the Province, a strong vigorous, and healthy sentiment would readily develop in all classes of the community, as it has in the State of Maine, and especially among the settlers in the regions where sport is chiefly found, or can best be improved.

In the United States the importance of educating the people in this direction is recognized. The Department of Agriculture at Washington has been, and is to-day, carrying on this work energetically. Bulletins are issued by it on various subjects, such, for instance, as the value of the quail to the farmer as an insect destroyer, and of the usefulness of other birds in assisting the farmer in destroying noxious weed seeds, insects, and harmful vermin, and are freely circulated. Commissioner Whipple, of the New York State Forest, Fish and Game Commission, stated recently, at a convention of the New York State Forest, Fish and Game Leagues, that at least 100 nights of the year be devoted to giving lectures throughout the state, with the view of advising the public of the objects of his commission and as to the advisability of supporting its efforts.

The following extract from the 1908 report of the Game and Fish Commissioner of the State of Alabama exemplifies very clearly the necessity of some such action on the part of the authorities:

"As a result of scientific research of the most extended nature it has been ascertained that the cause of the prevalence of many maladies, and the problem of weed control, is largely attributable to the slaughter of our insectivorous birds, which in the past have been wantonly murdered by the million. Birds annually destroy thousands of tons of noxious weed seeds, and billions of harmful insects; they were designed to hold in check certain forces that are antagonistic to the vegetable kingdom. A noted French scientist has asserted that without birds to check the ravages of insects, human life would vanish from this planet in the short space of nine years. He insists that insects would first destroy the growing cereals, next would fall upon the grass and foliage, which would leave nothing upon which cattle and stock could subsist.

The possibilities of agriculture having been destroyed, domestic animals having perished for want of provender, man, in his extremity, in a barren and desolate land, would be driven to the necessity of becoming cannibalized, or subsisting exclusively on a diet of fish. Even granting that only a portion of what the eminent Frenchman asserts is true, it is easy to glean from his theory that birds are man's best allies, and should be protected, not only on account of their innocence, bright plumage and inspiring songs, but because they render to the farmer valuable assistance every day."

It would seem, therefore, that not only is the education of the people to an appreciation of the value of the fish, game and birds of the Province a necessity, but that in its undertaking there is ample scope for cordial co-operation between the Departments of Agriculture and Game and Fisheries. Mr. C. W. Nash, the eminent ornithologist and ichthyologist, by means of a series of lectures to farmers, has done excellent work in this direction, and your Commissioner believes that the broadening and extending of such a system, together with the free distribution of educative bulletins on all matters appertaining to the subject, would produce most far-reaching and satisfactory results.

Your Commissioner would also point out that the duties of certain of the officials of the Department of Lands, Forests and Mines, such as the fire rangers, as well as those of the newly organized provincial constabulary, bring them into close touch with matters intimately connected with fish and game protection, and that the loyal co-operation of these officers in the enforcement of the game laws and fishery regulations is most earnestly to be desired. The provincial constabulary force, under its new chief, may well prove an invaluable aid to the officers of the Department of Game and Fisheries, for it is, to a certain extent, a secret service; and will, therefore, at times have in its possession information not otherwise procurable by the Department of Game and Fisheries.

As regards corporations, who are in a position to co-operate with the Department of Game and Fisheries, and whose co-operation it would seem most advisable to secure, your Commissioner would draw Your Honour's attention to the fact that the great railways have a definite and acknowledged financial interest in the maintenance of the fish and game in the Province, as an attraction to tourists, and thereby as a means of swelling their passenger receipts, while at the same time, owing to the nature of their organization, they are most advantageously situated, especially in the more sparsely settled regions through which their lines run, to render this co-operation effective. Your Commissioner is happy to be able to report that he has had the opportunity of pressing upon certain of the companies the desirability of their assistance in the matter of fish and game protection, and has met with a most courteous and sympathetic hearing. Your Minister of Public Works has been pleased to agree to commission as

deputy overseers any officials appointed and paid by the railroads to take an active part in the protection of fish and game, and already the Algoma and Hudson Bay Railway Company, after consultation with your Commissioner, has taken advantage of this offer to appoint such an officer. At the present time, also, the managements of some of the greatest railroads, operating in this Province, have under consideration plans for assisting the authorities in a parallel direction, and your Commissioner hopes that before the presentation of his full report these plans will have matured, and taken definite shape, so that he will be enabled to present them therein.

Your Commissioner would reiterate once more that, to develop and exploit the natural advantages of the Province in fish and game, climate and scenery, to make barren and wild lands productive of a great income to the Province, and to build on solid foundations, which will secure the fruits of these efforts to all future generations, it is necessary that, not only should the officers of the various Government Departments, nearly or remotely interested, most cordially co-operate, but that the interest of the public must be awakened, and its co-operation solicited and won, which can only be effected by educating the public to a realization of the issues at stake.

The storehouse of nature, filled with treasures of incalculable value, are none the less exhaustible. The history of this continent has proved that the wanton destruction of to-day but spells the extinction of a whole species to-morrow. To bring the people to a realization of these matters should be the ambition and care of a government, and hand-in-hand with an aggressive educative policy for this purpose there should be adopted a policy of conservation, framed on broad lines, such as those pictured by President Roosevelt in his instructions to the National Conservation Commission, on its creation in 1908, when he wrote:

"Our object is to conserve the foundations of our prosperity. We intend to use these resources, but to use them so as to conserve them. No effort should be made to limit the wise and proper development and application of these resources; every effort should be made to prevent destruction, to reduce waste, and to distribute the enjoyment of our natural wealth in such a way as to promote the greatest good to the greatest number for the longest time."

Your Commissioner would, therefore, most strongly recommend that:

1. The officials of all Government departments, nearly or remotely connected with matters appertaining to the protection of fish, game and birds, be instructed to co-operate, cordially and loyally, with the officials of the Department of Game and Fisheries.

2. The Department of Agriculture, together with the Department of Game and Fisheries, undertake the education of the people to the economic value of the birds, as the safeguards of agriculture, and of fish

and game, both as sources of food supply and as an attraction to the tourist, by means of bulletins, such as published and circulated by the Department of Agriculture at Washington, and by an amplification of the lecture system, such as already conducted by Mr. C. W. Nash.

3. Every encouragement be given to any corporation desirous of assisting the Government in the enforcement of the game laws and fishery regulations.

Provincial Park Preserves.

The Province of Ontario contains many thousands of acres of wild and wooded lands, whose geological formation discloses no valuable mineral resources, and forbids the possibilities of agriculture, but whose natural beauty is a constant joy to those fortunate enough to visit them, and whose peaceful sylvan recesses and rugged fastnesses afford a luxurious home for the song, insectivorous, and game bird, as well as for the moose, the deer, and the many smaller but valuable fur-bearing animals. It has been said that nothing in nature exists without a cause, and if a reason be sought for the existence of these wild and beautiful lands, what nobler or grander one can be conceived than that they are designed to be the perpetual and unspoiled playground of a great and populous nation, wherein its sons and daughters may seek both health and recreation, and where bird and beast alike may exist under adequate protection?

The progress of modern civilization has entailed extravagant demands on nature, and the blatant call of demand drowned the feeble plaint of an ever-diminishing supply. Fortunately, however, a powerful voice was raised in time, and the nations of the continent were made to understand that it is easier to fell than to grow, easier to exterminate than to create. It had long been realized that all wild life reproduces itself more prolificly and healthfully under natural conditions, and it required but the launching of the idea of Government-owned park preserves for the principle to be cordially welcomed and accepted by all classes of the community. Throughout this continent the adoption of the principle has been remarkable both for its rapidity and for the variety of its application. Sea-girt islands have been selected as breeding places for the gulls, where no man may venture to shoot; ranges of wild land and hills have been assigned to the elk to make his home in, and others to the moose or smaller forms of deer life and birds; hills and mountains have been declared the sanctuary of the mountain sheep and goat, and vast tracts of devastated timber lands have been set aside, to be sown with the seed that will produce the lumber for generations yet to come.

Already the success that has attended the movement has been most marked, and not only are certain species of birds and beasts, formerly in danger of extinction, once again beginning to multiply in the pre-

served regions, but, in common with other four-footed and winged creatures, are spreading in increasing numbers over contiguous districts. In fact, it may be said that in the national park preserve has been discovered the secret of perpetuating our big and other game.

Ontario has not been behind in grasping the wisdom of this policy, and in the Temagami, Algonquin, and other provincial parks the helmsmen of her destiny have set aside, alike for the people of to-day as of to-morrow, great tracts of land, where nature may continue to hold undisputed sway, where the birds and beasts may thrive and breed, to spread in plentiful numbers over the surrounding territory, and where men and women may seek simple and healthy repose from the cares and worries of strenuous modern life.

The area of the Province, however, is so vast that there would still seem to be scope for the extension of this most excellent principle.

At the time the pine timber was being taken out from the territories where very little land suitable for agriculture existed, men went in on the wave of the lumber industry, and, picking out a spot where there chanced to be a little arable soil, fit to produce oats, hay and potatoes, etc., proceeded to erect a small home, finding employment during the winter in the shanties, and in the spring on the drive, after which they devoted themselves to raising the crops indicated, and for which they obtained high prices among the lumbermen. After the pine was taken out and the wave of lumber operations receded, these men were in many cases left high and dry, with wives and families to support. The land they owned not being really suitable for agriculture, they eked out a very poor livelihood. Their homes are often far removed from schools, and consequently their children do not have the same opportunities for education as exist generally throughout the Province. These men have, to a certain extent, become dependent on the game and fish of their neighborhood to furnish no small proportion of their daily food. It would seem that the welfare of the Province would be advanced were their condition ameliorated. The purchase of holdings of this nature would give cash to these poor settlers, with which, if homesteads were allocated to them in more fertile regions, and free transportation to the same provided for them, they would be enabled to start life afresh under more advantageous circumstances, whilst these same lands, so barren and useless to the settler agriculturist, would be a suitable and profitable addition to the park preserves of the Province and for reafforestation.

Since undertaking his present duties your Commissioner has had the opportunity of visiting only one of the provincial park preserves—the Algonquin National Park. The extent of this park is some 45 by 45 miles, comprising, approximately, 24 townships; and, though the objects of the park are being in many respects fulfilled, and bird and animal life increasing, after consultation with the Park Superintendent, and from other sources of information, your Commissioner has been forced

to the conclusion that the staff of rangers for the efficient wardenship of the park is totally inadequate.

At the present time there are but fifteen rangers, and in a broken and woody country of this description it is vain to expect such a small staff to provide proper and sufficient protection. Mr. Shier, a lumberman of twenty-five years' experience in the woods of Northern Ontario, in giving evidence to your Commissioner on this point, remarked:

"In my opinion, you ought to have two men to one township."

Although a staff of such a size as indicated by this gentleman would be beyond the funds at present available, nevertheless some addition to the permanent staff of the park is most urgently needed. The Superintendent of the park is in the anomalous position of being responsible for the efficient discharge of their duties by the wardens, while, at the same time, being required to be practically continuously at his headquarters, in order to deal immediately with any malefactors the rangers may bring before him. That some supervision of the rangers is necessary would seem to be obvious, as likewise that to supervise their work effectively would entail an inspector being almost continuously in the woods the year through; but, on the other hand, it is equally plain that someone is required at headquarters to discharge the magisterial functions of superintendent and to attend to administrative details. It would appear, therefore, that a chief ranger is a necessity, to work directly under the Park Superintendent; and, though an experiment in this direction proved unsuccessful, the falling of one into evil way does not imply that another would, of necessity, do likewise. In fact, your Commissioner believes that in the Province of Ontario many a suitable man, both able and willing to discharge the duties of such a post, is to be found, if only they be sought amongst the ranks of those whose life records and experiences prove their suitability.

One of the main difficulties which seem to attend the efficient wardenship of the park is that, at the present time, the rangers cannot arrest or pursue further than one mile outside the park boundaries. Such a state of affairs is subversive of good results, and weakens the authority of the wardens, for to chase an offender out of the park and then be obliged to let him escape, is but to encourage the offender in the belief that he can return to his malefactions with impunity, and to discourage the wardens in attempting to arrest. The laws and regulations have been designed to check these classes of offences. Placing obstacles in the way of the enforcement of the law is the surest way of encouraging the commission of these offences.

Another difficulty encountered in the wardenship of the Algonquin National Park is that the boundaries of the park admit of entrance being gained thereto by numerous waterways from outside. Many a man, therefore, can easily slip into the park unobserved, making use of these waterways, and starting from the lakes outside. In fact, the presence of a chain of lakes immediately outside the boundaries of the park

would appear not only to be a source of strategical weakness from the point of view of efficient administration, but, judging from the evidence of the park superintendent, the actual cause of a very great portion of the troubles experienced by himself and staff.

In dealing with the subject of provincial park preserves, your Commissioner desires to call to Your Honour's attention the great increase of beaver within them. From the evidence collected by him on this point he feels assured that these animals have now attained to such numbers that to remove the normal increase would be proper and advantageous to the parks. Such a system, in the matter of game, is worked by the authorities in Germany; and, were it adopted in Ontario, would provide a very considerable revenue, sufficient, in all probability, to at least bear all the expense of the maintenance of the parks. As accurate as possible a census of the beaver should be taken annually, the numbers to be taken decided upon, and the localities for the taking carefully selected by the responsible authority, arrangements made for the proper treating and preparing of the pelts; on each pelt should be branded a Government mark, and when the pelts are ready for the market they should be advertised for tender or sold by auction. The killing of beaver should only be entrusted to thoroughly competent and reliable officials, as it would, in the opinion of your Commissioner, be dangerous and unprofitable to undertake it with officials whose probity, at all events, was not absolutely beyond question. In fact, it would seem that the supervision of this work should be one of the duties of the Chief Ranger referred to in a preceding paragraph.

As the population in Ontario grows and its tourist traffic develops, the number of visitors to the public parks will inevitably be greater, and the demand for guides will steadily increase. The science of forestry has made rapid progress, and undoubtedly will play an important part in the future economics of the Province. Already, indeed, much attention is being paid to the prevention and extinction of forest fires, and the Department of Lands, Forests and Mines employs quite a considerable number of fire rangers at certain periods of the year. In the University of Toronto a special forestry class is held, under the supervision of Professor B. E. Fernow, and it has been brought to the attention of your Commissioner that anything that can be done to assist these young men to a practical knowledge of the woods is a step in the direction of the future prosperity of the Province. Practical knowledge of the woods can only be obtained by personally visiting and living in them. The expenses of education bear pretty hardly on the pockets of many of the ambitious young men of to-day. Employment as guide or forest fire ranger would appear to offer these young men not only a practical road to knowledge of the woods, but also an opportunity of making a little money with which to carry on their education. Young men, attested by Dr. Fernow to be proficient canoemen and swimmers, to have a reasonable knowledge of cookery and the theoretical side of woodcraft, and to

be of good character and physique, should make ideal guides for the average tourist, for they would be cleanly in habits and polite in manners; and, in a very short space of time, would be equally at home as the woodsman in the particular districts in which they were employed. Other young men, without the particular qualifications necessary for guiding, would, at least as fire rangers, be obtaining practical knowledge of the woods, of life in the same, and of the practical side of fire protection for the forests, as also, probably, of fire extinguishing.

The people of Ontario, as a whole, maintain the park preserves, but only a proportion of the people are able or desirous of making use of them; and, therefore, it would seem not to be unreasonable to attempt to lighten the burden on those who do not by imposing a small fee for the privilege on those who do. A registration fee of 50 or 75 cents would deter none from coming, but would furnish an additional source of income to provide for the cost of maintenance and, equally important, provide statistics as to the numbers making use of the parks.

Your Commissioner would, therefore, recommend that:

1. Power be taken to expropriate gradually the holdings of settlers in barren and unprofitable lands, adjudged unsuited to agriculture, the said settlers being offered free lands in districts more suited to agriculture, and, with their wives, families and belongings, free transportation to same.

2. The following townships be added to the Algonquin National Park: To the south—Livingstone, Laurence, and Nightingale. To the east—White River, Clancy (east half), Guthrie, Barron, and Edgar.

3. A chief ranger be appointed for the Algonquin Park.

4. The number of rangers in the Algonquin National Park be increased to 24.

5. A system of taking the normal increase of beaver be adopted for the provincial park preserves, pelts to be taken by Government officials, branded with the Government brand, and sold by tender or auction, the proceeds of such sales being devoted to the maintenance of the provincial park preserves.

6. The students of Dr. Fernow's forestry class be encouraged to go into the woods and act as guides in the provincial park preserves when it is attested by Dr. Fernow that they have the proper qualifications, and be employed, as far as possible, as forest fire rangers, or rangers' assistants, by the Department of Lands, Forests and Mines, free transportation to their destination and back being provided at the public expense.

Deer.

One of the penalties of advancing civilization in all countries has been the comparatively rapid disappearance of the larger forms of wild animal life indigenous to them. The axe of the woodman, the opening of a country to agriculture, the creation of trade and transportation

routes, with the consequent increase of population and the facilities thereby afforded for the exploitation of newly-opened lands to supply the demands for game from established towns and cities, have all played their part; but on this continent an additional factor must be credited with a large share of the responsibility. Each man child born to the country seems to have inherited in most pronounced form the hunting instinct and, in the past at least, something of the lust of slaughter. The truth of this, and its full meaning, was probably first realized when the two nations of North America awoke to the fact that the buffalo were no more. Certain it is, however, that efforts to counteract these combined influences are of comparatively recent date.

In the United States, where civilization made the more rapid progress and population the more rapid increase, the effects of wanton destruction were first noticed and felt, and consequently game protection advanced there by rapid strides, whilst in Canada it still remained in its infancy. Now that Canada, in her turn, has entered upon her era of increase and development, it would seem but wise for her provinces to take advantage of the experience of those who, in these respects, have already passed through the stages of evolution in which they to-day find themselves.

That the economic value of deer can ever even approximate to that of the fish is not to be contended, either as a source of food supply or as an inducement to the tourist, for in the scheme of nature there is no provision made for abnormal reproduction of game animals, such as exists in the fishes, and also almost every man, and a great many women, are expert anglers, and in the course of the year find some opportunity of displaying their skill, while in these days only a proportion of the male population have either the means or opportunity to venture into the woods in search of deer. The economic value of deer, however, though less than that of fish, is none the less very high, and should by no means be overlooked or underestimated; for, outside of the money brought into the Province thereby, there is still the consideration so ably set forth in the 1908 report of the Game Commissioners of Pennsylvania:

"Through the increase of game we feel that an incentive to outdoor exercise and recreation is supplied that cannot be secured through any other process. An experience in camp life and in handling and caring for firearms is secured that is of great worth to our citizens who indulge in hunting, through which they, as individuals, secure better health, and are, therefore, better fitted to fill the place allotted to each in his respective community. These things together—better health and, therefore, better citizenship—joined to experience in camp life and in the handling of firearms, appear to us of great value to the state and the nation, as they surely raise our standard of defence in time of trouble, in the shape of war, either from within or from without, far above that of any people who do not hunt. We feel that the

presence of game is of great value to the state, and that hunting is a necessary adjunct to our national success; and that, therefore, the state owes it to itself to provide some method whereby game can be increased."

The Province of Ontario has been abundantly endowed by nature with forests and wild lands well suited to the maintenance of large herds of deer, and her ranges were originally stocked to their utmost capacity. Owing, however, to the advance of civilization, with its train of consequences before enumerated, as likewise to the fact that for many years the slaughter of deer was practically unchecked, great ravages have been made on the numbers of the deer, with the result that to-day in many localities their ranks are sadly thinned; and it would appear to be the almost unanimous opinion of those who have studied the subject, or take a personal interest in it, that some steps should be taken, and that immediately, if the deer are to be conserved to the Province. In any case, without taking a pessimistic view of the situation, it can be safely said that further conservation measures on the part of the authorities are a necessity, for the diminution in the numbers of deer almost throughout the entire Province is well marked and admitted, and that the time for these measures is now, when the material available is still ample for the upbuilding of a great and permanent supply.

Fortunately the experience of our neighbours has proven that, as expressed by the Game and Fish Commissioners of Minnesota in their 1908 report:

"Deer respond readily to protection, thrive and multiply in the vicinity of settlements, when not molested in close seasons, domesticate easily, and may be retained in abundance under ordinary restrictive laws."

So that, by studying the laws of our neighbours, and selecting those which have been most efficacious and beneficial, it should be possible for the authorities to ensure the conservation of at least an equal supply of deer to posterity as exists at present, without laying any undue hardships on the sportsman-citizen of to-day.

Advocates of reforms in the deer laws are as numerous as the remedies they suggest, but, in the opinion of your Commissioner, Dr. Hornaday, the eminent naturalist and head of the Bronx Zoological Society, placed his finger on the vital issue when, in an interview accorded to your Commissioner, he stated:

"There is no surer method of exterminating any variety of big game than to allow the destruction of the females."

In enlarging upon this subject, he pointed out that the adoption by hunters of a motto,

"Never shoot until you see the horns,"

not only means the preservation of many does to produce one or two fawns in the ensuing spring, but in itself is the most powerful safe-

guard that can be devised by the state for the protection of human life in the woods, for almost all the hunting accidents, which on this continent are so lamentably numerous as to be almost a public scandal, occur through snapshooting at a moving object whose nature, even, cannot be discerned.

That such a law would be viewed by many in this Province as a disagreeable innovation is probable; but it must be remembered that all innovations, from the umbrella to the telegraph, have met with opposition at the hands of a prejudiced populace, and time and again has it been proved that the popular prejudice will disappear with extraordinary rapidity if the innovation or measure is intrinsically good and worthy of popular approbation.

Considering this question to be of great importance, your Commissioner feels no hesitation in quoting at some length from the reports of the various fish and game commissions and wardens in the United States, where conditions are, perhaps, even more critical in respect to deer than they are in this Province, and where the men in touch with the conditions can speak from experience of an actual application of such a law.

The Chief Game Protector to the Game Commissioners of the State of Pennsylvania writes in his report of 1908:

"When the bill proposing to limit the killing of deer to a male deer with horns, and which afterwards became law, was first introduced, I was opposed to the measure. * * * I thought that if a measure of this kind became law it would be very apt to result in trouble to many men who otherwise intended to be honest; that because of the thick underbrush found in the deer territory, the high bracken and rough country, it would be almost impossible to determine the sex of a deer until the deer had been killed. I preferred the making of an absolutely closed season for deer, if protection to that extent was found to be necessary, and I at once began a canvass of the Senate and the House of Representatives relative to these matters. I also consulted sportsmen and other men who were in the habit of going into the woods during the deer season regarding their thought on the subject, and found that, almost without exception, the bird hunters, the rabbit hunters, the lumbermen, the land-owners, and the people generally who desired to go into the woods during the last two weeks of November, including many deer hunters, favoured the passage of this measure. They argued that they, as citizens of this commonwealth, had just as much right to be in the woods at that time as had the deer hunter, and that, under the then existing law, there was not one moment of all that time that the life of any one of them was safe. They claimed that they, as human beings, were just as much entitled to protection as were the deer. I found from statistics gathered by the Biological Survey at Washington, D.C., that forty-eight men had been killed and one hundred and four wounded within the United States by deer hunters during the

open season of 1906. I, therefore, refrained from opposing this bill before the Legislature, and urged the Governor to sign it when it came before him. I am now satisfied this is one of the best measures ever placed upon the books of Pennsylvania. * * I am certain that no more deer have lost their lives, in violation of law, since the passage of this act than would have been killed illegally during the same period had there been an absolutely closed season. * * * I am confident the great majority of hunters respect this law. * * * It is, of course, a new idea, and very trying to deer hunters in this state to hold their fire when a fine doe or deer of any description stands in front of them. Yet this was almost invariably done. * * * From data collected I am satisfied that the number of bucks killed last year did not exceed one-fourth of the number of deer killed during the fall of 1906, and would not exceed two-thirds of the number of bucks killed during that season. * * * The great majority of the deer hunters I have met last fall, both during the season and since that time, although frequently disappointed in not securing a deer, expressed themselves as satisfied with the law. The feeling of personal security surrounding each one apparently far outweighed any pleasure they might have derived through the killing of deer. * * * I noticed that, almost without exception, the opponents of this law were men who did not realize the value of this act as a preserver of human life, or a man whose sole desire was to kill, no matter what the result might be to others. * * * The number of deer killed in this Commonwealth during 1906 was in the neighbourhood of 800. Of this number, perhaps 350 were bucks and the remaining 450 were does. From positive reports received from several counties not more than 200 bucks were killed last year, or at least during the past season, throughout the entire state, and I believe I am within bounds when I say that not more than thirty does will be found to have lost their lives. * * * If these figures are correct, and the same ratio of killing was followed as last year, we have spared to us about 150 bucks and about 420 does, or 570 deer in all. The majority of does give birth to two fawns, so that I think an estimate of one and one-half fawns to a doe for this year would be fair and reasonable. Six hundred and thirty fawns, added to 420 does and 150 bucks, will give us 1,200 deer to start with this fall that we would not have had under the old law. This seems to be a good showing, and one that would justify a continuance of this law, were its sole and only object to preserve and increase our deer; but as the chief purpose of this act was the preservation of human life and limb, this addition to deer life in the state is only incidental. Still it means much."

The State Fish and Game Commissioner of Vermont, in his 1908 report, writes:

"The prime reason for the rapid increase undoubtedly has been in the protection of does, allowing deer with horns to be taken only.

It is also known to the Commissioner in several instances where the hunter's life has been in jeopardy, but saved through the caution of other hunters waiting to see if what they supposed to be a deer had antlers, when, to their surprise, another hunter came into view. For this one reason the law is a protection to human life. Eight out of ten illegally shot, or killed by dogs, are does."

The State Game and Fish Commissioner of Alabama, in his First Biennial Report of 1907-8, writes:

"The provision of the game law limiting the killing of deer to bucks only has had a most salutary effect on the efforts of the state to save these beautiful and valuable animals from extermination."

The State Game and Fish Commissioner of Colorado, in his Biennial Report for 1907-8, writes:

"The law existing immediately prior to the passage of our present law forbade the killing of any deer, except that each person could kill one deer with horns. That excluded the killing of fawns of either sex, and the killing of does. This afforded the deer an opportunity to increase in their natural way, and during the years that law was in existence a marked increase was noticed, practically all over the state, where deer are found; but under our present law, taking into consideration the loss of fawns, because of the killing and crippling of the mother, and the separating of the fawns from the does, leaving the former in the deep snows of the mountains, and the consequent exposure to all the natural enemies of its kind, I believe I am safe in saying that by far a larger per cent. of the does and fawns were lost to the state than of bucks. This tends more than anything else to the extermination of the deer. In order to increase the deer, the does must be protected first, in order that they may bear increase, and the increase must likewise be protected until it can be given a chance to mature and produce more of its kind."

The above quotations, in the opinion of your Commissioner, constitute succinct and convincing testimony to the efficacy of such a measure, both from the point of view of conserving the deer, if not of obtaining an actual increase in their numbers, and as a protection to human life and limb, and render it unnecessary for him to make any further remarks on this subject.

Attention has been called to the demand from cities and towns, whose inhabitants often cannot spare the time to go into the woods themselves to kill a deer, for game food, and in Ontario the demand for deer meat is so great that in many of the smaller towns and villages the butchers handle very little other meat at all during the season in which deer meat can be legitimately sold. This demand obviously produces the market hunter and, in addition, also encourages many a man to go into the woods after deer who would not do so unless he were assured of recouping himself for his time and trouble. It is plain, therefore, that the prohibition of the sale of venison consti-

tutes almost as powerful a protective weapon in the hands of the Government as would the enforcement of a close season all the year round, and at the same time bears less hardly, not only on the hunters, but also on the general public who enjoy their venison steak and chop, though, of course, even such a measure as this should not be enforced longer than absolutely necessary, as the policy of the Government should always be to give to the general mass of the public every opportunity of enjoying the natural food resources of the Province.

In regard to the period of the open season, there would seem to be a pretty general opinion abroad that the dates have been fixed too early, and that throughout a very considerable portion of the Province the meat of the deer is in consequence often wasted, owing to putrefaction before it can be removed. The climatic conditions of the accessible portions of the Province are, broadly speaking, such that no considerable quantity of snow need be anticipated in an average November or weather sufficiently and continuously cold as to prevent the melting of the snow, should it fall, under the rays of the sun. The temperature, however, is, as a rule, markedly lower at the end of the month of November than at the beginning. Consequently it would seem that if the season fell fifteen days later in the year there would not be much risk of snow tracks assisting the hunter, whilst, not only would the deer meat be less likely to spoil before being removed from the woods, but also the later season will make, or at least threaten to make, things harder for the sportsman, and, as Dr. Hornaday remarked to your Commissioner when discussing this point:

"Anything which accomplishes this, tends towards the preservation of the species."

Your Commissioner would, therefore, most strongly recommend that:

1. The open season for deer be fixed from November 15th to November 30th in each year, both days inclusive.

2. The bag limit for each hunter during each open season be fixed at "one horned deer."

3. The penalty for exceeding the bag limit, or for killing a doe or fawn, be not less than $25.00 or more than $100.00.

Small Game.

The object of protection is primarily to perpetuate existing and indigenous species of game, for the extinction of any species is recognized to be a direct economic loss to the community. In particular cases, also, protection may occasionally be used to allow the firm establishment and acclimatization of a newly introduced species. In no case is the object of protection to deprive the public of the advantages of its natural resources in fish and game as a source of food supply.

Restrictions on the sale of game, though frequently necessary for

the preservation of a species, are almost invariably unpopular with the majority of the public, for game is a highly esteemed table delicacy, for which no satisfactory substitute has ever been discovered, pleasing, indeed, to the palate of rich and poor alike, and, while everyone eats, it is the minority only who can be expected to appreciate and view the diminishing numbers of any particular variety with alarm, and with sufficient unselfishness to be willing to sacrifice their epicurean or sporting proclivities for the good of future generations.

Many varieties of game retain to a great extent their characteristics of hide, fur, or plumage under varying climatic conditions, so that in legislating for the protection of any individual species, it was found neecssary to forbid trade in that species in any shape or form during the closed season, in order to make that closed season really effective, for there was usually no practical means of distinguishing the imported from the native variety, and, if the former were on the market, no amount of legislation could prevent the latter appearing there also.

The principle is most undoubtedly sound, and not only for the above reason, but because, also, the onward march of conditions leading to the necessity for protection is very similar always in contiguous provinces and states, and the closing of the markets in all is a surer guarantee of protection than any measure each, individually and alone, could ever have devised, for it removes the possibility of trade on a large scale at a profit.

Where, however, no inter-provincial or inter-state affiliation of interests need be considered, and where the importation for sale of a species from a foreign country, to which no harm will be done by such importation, will mean the placing of a certain variety on the market at such a price as not to tempt the local market hunter to slaughter the indigenous species in competition, or where there is convincing evidence that such importation will not affect the demand for the indigenous animal, it would seem that the principle of the prohibition of the sale of that particular species during the closed season could be safely and advantageously departed from. Certain classes of game lend themselves readily to domestic raising and in some of the states of the Union the raising of game in captivity has already been placed on a profitable commercial basis, thus creating a new industry, and affording a variety in food to the people at a reasonable price, both highly desirable objectives from an economic point of view. Legislation to allow for the sale all the year round of game thus raised has not as yet been perfected, and requires considerable elaboration of machinery, in order to be feasible under existing protective laws, so that, outside of drawing to Your Honour's attention this new industry, and its economic value, and the advisability of preparing for its introduction into this Province, your Commissioner will not in this interim report deal with the question of game farms, but will confine himself

to a discussion as to the advisability of allowing the importation and sale of two particular species, the pheasant and the rabbit.

The pheasant, which has been introduced into portions of Southern Ontario, is undoubtedly a very fine game bird, and, in addition, though perhaps not quite so toothsome a delicacy as the native partridge, none the less much prized for its edible qualities. Under protection it may be said to have thrived in the districts in which it has been introduced, but, owing to the severity of the winter, and its constitutional and physical peculiarities, it can never be expected to adapt itself to the greater portion of the Province, or to live and multiply therein in a wild state.

In England thousands of these birds are raised under domestic conditions, and on attaining maturity, are released in the woods to furnish sport, and, subsequently, a market commodity, which, though comparatively expensive, is, nevertheless, within the means of a great portion of the public, largely, indeed, filling the general demands for game above referred to.

To take advantage of the English market, during the English open season, would seem to afford a means of satisfying the demand for game at a reasonable price in this Province, without in the least hurting the interests of those residents of Ontario on whose properties pheasants are to be found, and without offence to the principle of interstate co-operation, for the price at which they could be placed on the market would hardly allure the poacher to devote time and trouble to securing the local bird at the risk of incurring the penalties of the law, but, none the less, would, if an open season were allowed, permit those on whose properties pheasants were to lease their shooting to advantage, or if they preferred to shoot themselves, afford them a ready market for their birds, sufficiently remunerative to arouse their continued interest in the maintenance of the birds on their properties, and yet not sufficiently profitable to incite avaricious cupidity to slaughter every possible specimen for the sake of immediate gain.

The cotton-tail rabbit, indigenous to the Province, is, your Commissioner presumes, protected under that section of the Game Act dealing with hares, and consequently the sale of rabbits is debarred in Ontario during the greater portion of the year. In England the rabbit is practically a staple food, exceedingly cheap and much relished by the masses, affording, as it does, a tasty and wholesome dish, and it is safe to assume that very many old country men, now residents in Ontario, would gladly welcome and support a market of reasonably priced rabbits all the year round, and that their example would be followed by other sections of the community.

In Australia, as is well known, the rabbit is a pest, and consequently cheap, and your Commissioner has learned that it is possible to import these animals, frozen and in their skins, and place them on the market here at a figure not greatly in excess of that of the indige-

nous cotton-tail. The Wm. Davies Company of Toronto have already placed a shipment of these rabbits on the market with considerable success, selling them at 75 cents per pair, dressed, as compared with the average price of the cotton-tail, 50 cents per pair.

In this Province the indigenous cotton-tail is apparently not much relished as a food, and, judging by its price on the New York and Chicago markets, some 22 cents per pair, it is not very much esteemed by our neighbours to the south. The chief reason for this would appear to lie in the fact that its flesh is somewhat hard and bitter to the taste. The English or Australian rabbit, however, possesses a flesh more akin to that of veal in appearance, and is, in addition, sweet and slightly gamey to the taste. While this rabbit is a grazer, the cotton-tail is a browser, and, moreover, owing to its habits of retiring into the swamps and rough lands in the summer months, comparatively safe from the pot-hunter, during a great portion of the year. In appearance the two varieties are comparatively easy of distinction, and it may also be noted that, while the skin of the Australian rabbit is tough and can easily be removed whole, this is not the case with the indigenous cotton-tail, whose hide is much more brittle.

The rabbit is a prolific breeder, whose only known use in nature is to serve as a food for certain carnivorous animals and birds. It is, however, accepted by the best authorities to be unwise on general grounds to run the risk of upsetting the balance of nature by the extermination of any particular species, even though its uses to man may not be apparent, for the reason that no one can foresee the result of such extermination. The habits of the cotton-tail, however, as has been pointed out, are such as to largely eliminate this risk, and so, although the imported Australian rabbit would actually be fetching on the market a higher price than the indigenous rabbit, it would seem that the advantage of securing a reasonably cheap, wholesome and constant game food for the people outweighs the consideration of any problematical risk to the existence of the local variety, especially in view of the facts that the importation of the Australian rabbit would in no way be violating the principle of inter-state co-operation, and that the marked difference in flavour would in itself be a potent factor in the prevention of the substitution of the local variety.

As a game food, the price of 75 cents per pair, dressed, averaging 5 to 6 lbs., is not excessive, but it may be noted that, if the trade in rabbits grew to large enough proportions to warrant the purchasing of great quantities in Australia, and their importation via British Columbia, instead of as at present purchasing from the wholesale market in London, England, the price would, in all probability, be considerably reduced.

Your Commissioner is pleased to report that on all sides there is evidence that the close season of two years has had its beneficial effect, and that the finest native game bird of the Province, the

Canadian partridge (ruffed grouse), is distinctly on the increase, so much so, indeed, as to justify the proclaiming of an open season in the fall of the present year. This bird, prized alike for its sporting and edible qualities, is fortunately distributed over almost every section of the Province. Unlike the pheasant, it does not lend itself readily to domestic rearing, and consequently its price remains high in all countries, so that there exists no reason or inducement to encourage its importation for market purposes, or to sanction the sale of the imported bird during the close season.

In the past the open season for this bird has been from September 15th to December 15th. It would appear that the opening of the season, however, fell too early, for the reason that, as a rule, the coveys remain packed until the weather begins to turn cold, and are disinclined to take to wing, and in consequence the destruction of an entire covey is frequently an easy matter. That, if there be an open season for partridge, the deer hunter should be entitled to profit by it, would seem to be reasonable, for his bag of deer is limited, and the partridge would provide him an alternative sport to compensate for his outlay, besides being a most welcome addition to the camp menu. Many persons, however, who like to hunt the partridge, from motives of personal security, prefer not to venture into the woods when the deer hunters are afoot, and the convenience of these sportsmen also must be considered in deciding on suitable dates for an open season, although in framing dates for an open season on different classes of game the broad principle of making them as far as possible coincident should never be lost sight of, for, when the hunter is in the woods after one class of game within the provisions of the law, the lives of other classes cannot but be in jeopardy, for the temptation is obviously great, and frail human nature is but all too likely to succumb to its allurements. Hence, in considering the question of a suitable open season for partridge, a reasonable medium would apear to be attained by fixing the dates from October 15th to November 30th.

Your Commissioner would, therefore, recommend that:

1. An experimental open season be declared for cock pheasants in Ontario from October 15th to November 15th for the current year, both days inclusive, and that their sale be permitted during this open season, and for one month thereafter.

2. The importation of English or European pheasants, in bond through Atlantic seaports, be permitted during the open season in England, and that the sale of same be declared legal during the English open season, and for one month thereafter.

3. It be declared lawful to import Australian rabbits, frozen and in their skins, in bond through Atlantic and Pacific ports, and to sell them in the Province of Ontario throughout the year.

4. An open season for partridge be declared for the current year from October 15th to November 30th, both days inclusive.

Resident Hunting License.

Among the many causes which have worked for the protection of game and birds on this continent one of the most powerful has been the gradual arousing of the people to the value of human life. The opening up of its vast areas was only accomplished by the adoption of a policy which courted immigration, and which resulted in the arrival of thousands upon thousands of aliens, of all nationalities and classes, to spread over the land. Vast numbers of these immigrants belonged to the fiery-tempered peoples of Southern and Eastern Europe, accustomed in their own countries to the vendetta, the secret societies, and the family feud, and consequently bred and reared in the belief that each male, at least, should carry with him always the wherewithal to slay. The settler inhabitants of the land, living in the more or less secluded loneliness of the great wilds, dependent to a certain extent on the game resources of the district for their food, and with the recollections and traditions of Indian forays still fresh in their minds, naturally enough were practically all provided with firearms, and the wave of alien immigration unfortunately but confirmed them in the advisability of such precaution. Consequently at one time, outside of the big cities, every man was armed. The possession of a firearm is a direct incentive to shoot, if only for practice, so that, with the incoming of the immigration wave, there swept over the continent also a tempest of ruthless slaughter, not only of the big game and game birds, but of every living creature that could run or fly.

Demand will always create supply, so that, naturally enough, a great interest developed in the manufacture and sale of firearms, spreading its ramifications over the whole country, gathering into its net every hardware merchant on the continent, ready to resist tooth and nail attempts at legislation detrimental in the slightest degree to its trade interests.

The universal possession of firearms, however, led not only to the indiscriminate slaughter of bird and beast, but, as was to be expected, to a terrible waste of human life, with the result that, as the population gradually increased, and news facilities grew greater, the folly of the sanctioning of the universal carrying of firearms dawned on a people just awakening to the value of human life. In spite of the efforts of the firearms interests, legislation was passed, restricting the carrying and possession of firearms, and thus one great step towards the protection of game and birds was taken, for there is no greater menace to the game and bird life of a district than the Italian or other Southern European, wandering over it armed with a gun, and no legislation more difficult to introduce than that which antagonizes an interest whose representatives are to be found in every town and village.

The evolution of game protection has been traced in another section of this report, so that here it will suffice to note that accompany-

ing an appreciation of the value of fish, game and birds, and of the fact of their rapid diminution in numbers, they developed an understanding by the people of the loss they themselves were sustaining through the slaughtering and depredations carried on by aliens and foreigners, and from this understanding grew the desire to protect the public property, and to exact some monetary compensation, at least, for that which was destroyed for the amusement or benefit of the alien or non-resident. The desire bore fruit in the imposition of alien and non-resident hunting licenses. The advantages of such taxes, both as revenue producers and indirect protectors of game and birds, were so obvious that the principle spread rapidly over the whole continent. The collection, however, of these taxes was no easy matter, for no game warden can be expected to know every resident of a state or province, and men cannot be obliged to produce certificates of identification and residence, except when called on by law to produce such identification in the form of a license.

Consequently, the imposition of the alien and non-resident licenses was directly responsible for the birth of the idea of a resident license, and this idea matured rapidly and assumed concrete shape, not only for the sake of assisting the administration of the non-resident and alien laws, but because of a growing conviction in the public mind that those who gain recreation and amusement from the protection of fish and game cannot fairly claim that an injustice is being done in asking them to pay for at least a portion of the protection afforded by the state to their favourite sport, an argument, indeed, which has been constantly advanced by persons of all classes to your Commissioner in the pursuit of his present inquiries.

In the United States the policy of a resident hunting license has been adopted by one state after another, until to-day it is in force, in some shape or form, in over thirty of the states of the Union, and it may also be noted that in the recent session of the Legislature of the Province of Saskatchewan the new schedule of licenses enacted includes a $1.00 Bird License for residents of cities, towns and villages.

In Ontario there exists to-day a resident license of $2.00 for the hunting of deer, but further than this the idea has not been carried.

The danger to human life through the promiscuous carrying of firearms has already been referred to, and, although the enactment of a resident hunting license would not be so great a preventative of this evil as the imposition of a gun license, nevertheless it would undoubtedly prove a powerful factor in that direction, while at the same time be less likely to arouse the active antagonism of the gun manufacturers and hardware merchants. The value of such measure in the protection of game and birds, the economic worth of which, as an attraction to tourists and as farmers' best friends, has already been pointed out in a previous section of this report, would also plainly be enormous.

The third great advantage of a resident hunting license is its reve-

nue-producing qualities, which would enable the administrative and protective services of the Department of Game and Fisheries to be placed on a splendid footing, provided with an adequate equipment and with sufficiently paid and efficient subordinate officers, and able financially to undertake all necessary measures of conservation and propagation. An estimate of what such a license will produce can be formed from the information, based on the United States statistics, given to your Commissioner by Dr. T. S. Palmer, of the United States Biological Survey at Washington, who deals particularly with returns of this nature, and who stated that the numbers paying the resident hunting license, in the different states in which it is in force, ranged from 4 to 10 per cent. of the population, running highest in those districts in which population was most evenly distributed, and least in the territories where the bulk of the population was confined in great cities.

This same authority, as an estimate of the possibilities in Ontario, gave as his opinion that from 3 per cent. to 5 per cent. of the population could be expected to pay the fee, if such a license were imposed. This, on a basis of 2,000,000 souls in the Province, would mean a revenue of from $60,000.00 to $100,000.00. Your Commissioner realizes that to decide whether the bulk of the people is ready to favour such a tax, even though its advantages are so apparent, is a most difficult matter, but unhesitatingly states it as his opinion that any license, whether it were a Nipigon fishing license, a non-resident angler's tax, or even a hunting license, would be cheerfully paid by the majority of sportsmen, if the Government adopted a policy of devoting all the moneys so received entirely and directly to the protection of the fisheries, game and birds.

Many of the states of the Union who have adopted such a license, following the French system, exempt landowners from its operation, and your Commissioner is decidedly of the opinion that, in the enactment of such a measure in this Province, it would be advisable to exempt both the farmer and the settler on their own lands and adjacent waters, for to afford them this privilege over the rest of the community is to take the first step in their education as to the economic possibilities of game and birds, and these are most essentially the classes whom it is imperative to educate in this direction. Naturally, also, as such a license would be a hunting and not a gun license, it would in no way be operative against those who engaged solely in trap or target shooting.

That the state has sovereign right over the game within its borders has been established in law, and it would therefore seem not to be unreasonable for the state to impose a charge on those of its community who profit at the public expense, whether it be by big game or small, by four-footed creatures or by those that fly, even though by reason of their scarcity the charge for hunting certain species might have to be placed at a higher figure than others, providing always that the purchase of the more expensive license, even though for a limited period,

would carry with it all the privileges obtained by the purchase of the less expensive license. That such a license is beneficial as a deterrent to the promiscuous carrying of firearms, and as a protection to fish and game, your Commissioner has tried to show; that it would be a great revenue producer is undeniable, and, in conclusion, your Commissioner would point out that, though considerable opposition should be expected from the firearms interests, and from certain sections of the community, who, humanlike, desire to continue getting for nothing that for which they are not called to pay to-day, this revenue, if applied to conservation and propagation measures, would act directly in the best interests of both classes, for the increased protection would mean more plentiful game, to gladden the heart and provide sport for the genuine sportsman, and to attract in ever-increasing numbers the sportsman tourist, whose purchase of guns, ammunition and other similar supplies would swell the receipts of the hardware merchants.

Your Commissioner would, therefore, recommend that:

A resident hunting license of $1.10 (the 10 cents going to the officials or persons entrusted with the issuance of the licenses) be enacted for the privilege of hunting game or game birds of all descriptions not specifically provided for under the present Game Act, but that *bona fide* farmers and settlers be exempt from the operation of such a license, in so far as their own lands, or waters contiguous to same, are concerned; and that the purchase of a hunting license for any special animal or animals, if such license be of greater value than $1.10, carry with it all the privileges extended through the $1.10 license.

Ling.

Attention has recently been called in the newspapers to the high cost of food, and without entering into a discussion of this most vexed problem it can be stated broadly that in adopting measures that will provide cheap food for the masses a Government is acting in the best interests of the community.

Owing to the non-promulgation of the International Fisheries Treaty your Commissioner has decided not to include in this interim report the result of his enquiries under this head as regards fish in general, for the reason that the terms of the treaty may fairly be expected to materially alter existing conditions. He is pleased, however, to be able to report that, through his instrumentality, an experiment is now being made to provide a really cheap and palatable fish food in the shape of ling. The burbot, or ling, is our only fresh-water representative of the cod family. It is a highly predaceous fish, very destructive to other fish life, and, as will be seen from the Report of the Department of Game and Fisheries for 1908, increasing rapidly in the waters of the Rideau Lake System.

On investigation your Commissioner discovered that the flesh of

this fish is eaten in many localities, and in some, indeed, is esteemed a delicacy, and in view, therefore, of the fact that the catch of ling by the Government officers on the Rideau Lake System was being given to the farmers to feed to their pigs, your Commissioner entered into negotiations with the Department of Game and Fisheries, and the William Davies Co., with the result that the Company undertook to purchase a certain quantity of this fish from the Government at one and a half cents per pound, and to place them on the market at a price not exceeding six cents per pound. The first consignment is already on the market at a price of five cents per pound, and the William Davies Company reports that the experiment is succeeding as well as could be expected, and that already some second orders for this fish have been received from those who have tried it. In this way your Commissioner hopes that he has succeeded in opening a new channel of cheap food, but he would point out that in the lakes where the ling abound there are also to be found the bass, the pickerel and other sporting fish, which attract the angler, and that the removal of the ling was undertaken by the Department of Game and Fisheries entirely on its own initiative, as a measure calculated to increase the numbers of the sporting fish in these waters.

To allow the Government officers to remove these harmful fish during the winter months when their duties are light seems eminently desirable, and even profitable, if a reasonable market can be established for the ling, but to lease such fishing to commercial fishermen, or to allow others to engage in it, would, in the opinion of your Commissioner, be a very grave mistake, as it would be admitting to these confined waters the thin end of the wedge of general commercial fishing.

Revenue and Expenditure.

The question of conservation of the natural resources of the Province is vital to the present, but more especially to the future, prosperity of the community, and in consequence legislation dealing with it should be framed on the broadest possible lines, comprehending alike the conditions of to-day and the economic possibilities of years to come. If the conception of a policy is correct, and its broad general lines be adhered to, the details can be filled in, amplified and perfected as opportunity permits, and, even if a mistake in one of them should be made, it will in no wise endanger the whole fabric. In pursuing his enquiry and framing his recommendations, your Commissioner has had these principles ever before him.

In this interim report he has endeavoured to show the magnitude of the issues at stake in the conservation of game, game fish, and fisheries, alike as a source of wealth to the community, through the upbuilding of a great sportsman-tourist traffic, as for their intrinsic value as a source of food supply, not only in support of the measures he recom-

mends, but because he felt that in the past comprehension of the vast scope of this problem has been somewhat limited in perspective and vague. In approaching each question, however, not only has he had in mind the necessity for a wide range of view, but also the fact that the public welfare demands expenditures in many directions, and that the public purse is limited.

The base, therefore, on which his plan has been built is that in view of the present and future economic possibilities inherent in the fisheries, the game fish and the game of the Province, the full income derived from these sources to-day should be expended upon their conservation and development for at least a few years to come.

All moneys accruing to the public must of course be paid into the general treasury, but the Department of Game and Fisheries should be entitled to frame its budget for the ensuing year on the basis, at least, of its earnings for the current year, or better still, on a basis which will embrace the automatic and anticipated increase to its revenues for the ensuing year. A comparison of the revenue of the Department of Game and Fisheries with its expenditures for the years 1908-9 will disclose the fact that each year there has been a surplus of between $30,000 and $40,000. In these figures the cost of the inside service of the Department, which is charged under another head, is not taken into account. Assuming that this would amount to $15,000, there still remains a considerable sum in surplus revenue. Your Commissioner, however, realizes that this sum would not be sufficient to meet the additional maintenance charges which would occur in the adoption of the various recommendations contained in this interim report, but on the other hand he is convinced that an outside service, much more efficient in personnel and equipment, would ensure a very material increase in the revenue derived from the license fees, for at the present time it would seem probable that, in the non-resident anglers' tax at least, not more than 60 per cent. of the sums due to the Government are being collected; so that it would not be unreasonable to anticipate that a considerable proportion of the increased expenditure can be met out of the increased revenue.

Your Commissioner has further pointed out in this report that by the adoption of a resident hunting license of $1.10, an additional revenue of between $60,000 and $100,000 can be obtained. This, in conjunction with the utilization of the present annual surplus, and the anticipated gain in revenue from the more rigid collection of existing license fees, would give a sum amply sufficient to meet out of income, not only increased charges of maintenance, but also the initial cost of added equipment.

Your Commissioner, in this interim report, has not elaborated in detail to cover the Province his scheme for wardens, equipment or hatcheries, but, inasmuch as he realizes that the present time may be deemed inopportune by your Government to impose a hunting license, he desires to point out that, failing the adoption of that source of reve-

nue, his scheme, as herein presented, would still make no extravagant demands on the public purse.

The increased pay to efficient wardens would be largely met out of the salaries of the many underpaid men whose commissions would be allowed to lapse, for a man whose whole time is paid for can reasonably be expected to cover more ground than a number of men given a salary insufficient to warrant them devoting their whole time to the work.

The maintenance, also, of the boat equipment suggested would largely be counterbalanced by relinquishing the leases on other craft. In this regard it may be noted that for the region of the Georgian Bay and portions of Lake Superior and Lake Huron, for which six Class B boats, each with a crew of three men, have been recommended, the Department of Game and Fisheries estimates the present expenditure at roughly $13,000, as against the $14,000 estimated under the scheme which, considering the greatly improved service and the considerable area covered, does not appear to be a very serious increase.

That the equipment recommended, and the employment of competent men only, would give a better service, and consequently ensure a higher revenue from licenses than that at present secured, has already been pointed out, so that, in voting a special grant to cover the initial purchase of the boats of Classes B and C, the Government would be making an investment whose returns should be sufficient to cover the outlay within the period of a few years. In the establishment of hatcheries, even if funds were available, your Commissioner would not recommend for the first year the erection of more than two or three, and for this purpose a sum of $10,000 would be amply sufficient. The maintenance charges for each hatchery should not exceed $2,000. The establishment of a series of bass control ponds in a suitable district would cost but a small sum, say $1,000 to $1,500 at the outside, whilst the maintenance charge would be approximately the same.

The revenue for 1910 may fairly be assumed at $110,000, although your Commissioner understands this is $10,000 in excess of the estimate prepared by the Department of Game and Fisheries. Its officials admit, however, that their figures are most conservative.

While not attempting to furnish an elaborate budget, your Commissioner submits the following figures in support of his contention that the gradual adoption of the recommendations contained in the report are feasible, even within the bounds of an income unassisted by a hunting license.

Special Grant for 6 Class B Boats	$25,800 00
Special Grant for 6 Class C Boats	11,200 00
Special Grant for 3 Hatcheries and 1 series of Bass Control Ponds	10,000 00
Total	$47,000 00

Your Commissioner does not assert that this sum could be met out of the present annual income of the Department, but he points out that

placing the life of a boat at 15 years, that of the engine at 10 years, with probably a further life after scraping and refitting, and the life of the hatcheries at 30 years, assuming the price of money at 5 per cent. and looking at the equipment as capital expenditure the following would give the amount fairly chargeable to income, including a sinking fund to amply cover the capital expenditure:

Sinking Fund, annual charge	$ 3,500 00
Interest charges, 5% over the whole period on $50,000 00	2,500 00
Maintenance of Hatcheries and Bass Control Ponds	7,000 00
Annual Charges. Total	$13,000 00

Taking the 1908 expenditure at $70,000, and the estimated revenue for 1910 at $110,000, there remains a surplus of $40,000. Deducting amount chargeable annually to the added equipment, from this surplus, there remains a balance of $27,000 available to meet other recommended increased expenditures.

Acknowledgments.

In pursuit of his investigations your Commissioner has been accorded, on all hands, most courteous and invaluable assistance.

To the Commissioners and Game Wardens of the states of the Union he is indebted for the gift of their latest reports, game laws, and other official documents.

To the first President of the Ontario Forest, Fish and Game Protective Association, Honourable Chief Justice Sir Glenholme Falconbridge; to Mr. Oliver Adams, Vice-President of the same organization, and to many members of the same, to Hon. L. T. Carleton, Hon. W. E. Meehan, Dr. Wm. T. Hornaday, Dr. T. S. Palmer, Commissioner Whipple, Professor E. E. Prince, Dr. B. E. Fernow, Mr. John Pease Babcock, and many other distinguished gentlemen for kind advice and assistance; to the officials of the Department of Game and Fisheries for cordial co-operation;

To the Grand Trunk Railway Company, the Canadian Pacific Railway Company, the Canadian Northern Railway Company, and the Toronto, Hamilton and Buffalo Railway Company for their generous assistance in furnishing him with free transportation over their lines.

He also wishes to bear testimony to the capable services rendered by Captain R. Manley Sims, D.S.O., whom he was fortunate enough to secure as secretary for the work of the Commission.

Conclusion.

In presenting this interim report on those matters which he deemed it expedient to bring promptly to Your Honour's attention your Commissioner would crave leave to make the following remarks:

In the pursuance of his enquiries he has had constantly before him that you were expecting and relying on him to report to you truthfully, honestly and to the best of his ability, and according to the knowledge he acquired in the course of his investigations, upon those matters mentioned in the terms of his commission, and consequently he has spared neither time nor energy in endeavouring to gather all such information as he thought would be of assistance to you in coming to a just and true conclusion upon the matters herein reported upon.

He realizes that his recommendations, if adopted, will entail somewhat drastic changes and innovations; he understands that the Government of the Province is conducted upon well established party lines, and that in dealing with most matters of regulation and administration political exigencies must, in the nature of things, be expected to influence the action of the Executive, but his enquiry has so convinced him of the vast economic potentialities inherent in the fish and game resources of the Province that he has felt impelled not to shirk the task, but without fear, favour or affection to point out to Your Honour that, in his opinion, the public welfare can only best be served by the elimination of party interests in these matters, by placing of their conduct in the hands of a non-political commission, and by devoting greater sums to conservation and exploitation of these resources than the present policy contemplates or allows.

KELLY EVANS,
Commissioner.

Toronto, Feb. 5, 1910.